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THE TREATMENT OF HETEROPHORIA—AN ANSWER TO DR. GOULD.

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DR. Gould in the January number of the Annals calls attention anew to his innervational theory of heterophoria, and to a method of treatment which he regards as new and which he seems to consider universally applicable. The paper, while of value in bringing into notice once more a method which has doubtless been too much neglected, proceeds upon what appear to me such erroneous assumptions, that I have ventured to take up the space of the Annals in a consideration of some of the points involved.

In the first place Dr. Gould's method of treatment is by no means new. I myself have employed it for eight years, and when I began using it did not think of calling it new, for I was well aware that it had been known and practiced for many years before that—notably by Dr. Stevens from whom I learned it. I have employed it continuously with more or less success ever since, without, however, being led to ascribe to it the great value that Dr. Gould gives it. I have heard other ophthalmologists speak of it and supposed that it was the common property of the profession, and was therefore quite surprised to see it brought forward as something novel.

This, however, is a matter of very trifling moment. The real question at issue is whether Dr. Gould's theory is correct, and if the claims that he makes for his method of treatment are valid, for if so all our ways of dealing with heterophoria (and for that matter with squint as well), will have to be revolutionized. It becomes us therefore to examine the arguments upon which he bases his theory. These are as follows:

"(*a*) In convergence-adduction, the muscles overcoming the maximum prisms, bases out, that is possible, either internal rectus may be made to greatly increase its contractile power by simply carrying the object to the left or the right side of the field.

"(*b*) Extreme adduction (twenty feet) of exophoric eyes may be doubled, often trebled, in a minute or two by the device of slowly carrying the object gazed at, with weighted convergence-stimulus from the near to the distant point. If, as I said, one can lift with his arms only 200 pounds, one cannot lift 400 or 600 pounds in a minute by any analogous change of the method of lifting.

"(*c*) The extreme of primary adduction-power, and even the double of this extreme, may be held for several minutes, even half hour or more—I don't know how much longer. The extreme lift of other bodily muscles can only be held an instant, and not only this, but constant and uninterrupted tension or contraction of such muscles in lifting even very small weights is impossible.[1]

"(*d*) Besides all this, such constant tension, when solely muscular, is painful, even agonizing, if demanded by the will or by necessity. In the case of exophoria, the extreme of prisms, and even the double of the extreme, bases out, that can at first be held without diplopia, is in a minute or two continuously held without the faintest suggestion of pain or even of discomfort.

"(*e*) Muscular tissue, as such, cannot be made to double or treble its volume or its strength in a few hours or days, or even in a few weeks, but such increase of ocular adduction-power I see many times every day."

These arguments present some facts very familiar already to ophthalmologists, although they do not, I think, substantiate the thesis which Dr. Gould would base upon them. They do prove that the initial maximum of convergence, as measured by the degree of prism, base out, which a patient can overcome on the

[1] The statements contained in this and the following paragraph are only partially true if they mean that the adduction can be exercised up to an indefinite point without fatigue and that the exercise can be carried on indefinitely without causing distress. As a matter of fact, as soon as we push the use of prisms beyond 25° (representing only 13° of convergence, or less than one-fourth of the maximum that the patient can do), a sense of strain is apparent, and the effort cannot, as a rule, be kept up more than a few minutes. In this regard the internal recti are not essentially different from the other muscles of the body. With all of them the principle holds that they are capable of sustaining a continuous exertion only when that exertion represents a fraction of the total power of the muscle engaged and when the movement performed is an habitual one or one that has been made habitual by constant practice.

first trial, falls far short of the total power of convergence which the interni can be made to exert; but this most of us have known for a long time. No one, in fact, who is acquainted with the subject supposes that because a patient fails to overcome the diplopia produced by a prism of 15°, placed base out, this figure represents the actual degree of convergence of which he is capable. The very fact that he can converge through a much greater angle in looking at near points would alone disprove this. And hence the fact that he can suddenly double or treble his initial (apparent) maximum of convergence simply proves that the power was there all the time and that the facility to apply that power was lacking.

As a matter of fact, the reason why we so readily learn to perform adduction at a distance and can maintain the effort so long without fatigue is because it is a movement that we have been carrying on all our lives at near points in reading, writing, and doing all other kinds of close work; and the reason why we find any difficulty at all in doing it at first is that we have not been accustomed to performing the movement in that way, and have not, we may say, the knack of it. We are in the position of a skillful tennis-player who, obliged to forego the use of his right hand, tries to play with his left. His strokes at first are uncertain and ridiculously feeble; the straight drives that he executed with his right hand are replaced by futile pushes; and yet the strength of the left arm fully equals that of the right, and all that is lacking is the directive power.

It is readily conceded therefore that defective convergence is innervational in character, *i. e.*, it is due to lack of the proper nervous impulse, and its existence simply means that in this particular respect the patient's co-ordination is defective, and that he does not know how to use the power that he is already amply endowed with. But this fact, although restated with much force by Dr. Gould is by no means new; and what is more to the purpose, we are not at all justified in deducing from it the inference that he has made, *i. e.*, we cannot say that because deficiency in convergence is due to a failure of innervation, the exophoria which may be associated with it is also necessarily due to the same cause. This, to be sure, would follow if we admitted that the exophoria was the result of the failure to converge, but Dr. Gould really adduces no arguments to prove this, except that as the result of exercising the convergence the exophoria disappears. This fact, however, is quite susceptible of another explanation, and, on the other hand, there are facts which show that the exophoria is not in

all cases, or even in the majority of them, due to any anomaly of convergence-innervation.

In the first place, if this theory were universally true, all patients with exophoria should have deficient, and all patients with esophoria excessive primary adduction power. This is far from being the case. Many patients with exophoria can at once overcome prisms of 20° and 30° or more, while in esophoria it is sometimes the case that the primary converging power for a distance is defective, so that such patients can scarcely overcome 10° or 12° at first.[2]

Again, if Dr. Gould's innervational theory is correct, cases of esophoria ought to yield uniformly to exercise of the abduction conducted by placing prisms, base in, before the eyes; and, indeed he speaks as if this had been his experience in this class of cases. He admits, however, that the instances of esophoria and of hyperphoria that he has met with have been few[3] and the

[2] Thus in forty-two cases of exophoria in which I determined the convergence capacity, fifteen had normal power to start with, and twenty-seven defective convergence. But, as a matter of fact, the discrepancy in number between the cases with normal and those with defective power is not as great as these figures would imply, for of the twenty-seven with low converging power only four were cases of simple exophoria, the rest being cases of transition between exophoria and squint, (*i. e.*, those in which the divergence was so great that the patient was no longer making any effort to converge), or cases complicated either with hyperphoria or with a paretic condition of the superior or inferior rectus.

[3] To anyone who has done much work in connection with muscular anomalies it will seem strange that Dr. Gould should speak of the cases of esophoria and hyperphoria as being infrequent. In the practice of other ophthalmologists they are found with considerable frequency, esophoria being present in about the same proportion as exophoria and hyperphoria being more frequent than either. Thus in 208 consecutive cases which I examined I found

Esophoria		39
Exophoria		43
Hyperphoria	simple	14
	combined with esophoria	38
	combined with exophoria	37
Mixed conditions, (*i. e.*, esophoria alternating under certain conditions with a divergent strabismus, or a state in which insufficiency of both superior and inferior recti balancing each other, produced orthophoria in the primary position)		7
Uncertain or variable		8
Orthophoria		25
Total		208

results which he has attained with them have been inconclusive. My own experience extending over eight years, in which this very method has been tried in this particular kind of heterophoria over and over again in a great number of cases, has convinced me that in the vast majority it is totally inefficacious, the esophoria remaining precisely the same after repeated careful exercise of the abduction. Nor is the latter susceptible of being trained like the adduction. Given a primary abduction of 5°, this remains unchanged in spite of the most strenuous efforts of doctor and patient until a tenotomy is performed and then it mounts *pari passu* with the diminution effected in the esophoria by the operation. In fact, the only cases in which training of the abduction has seemed to me efficacious are those which have been subjected to a tenotomy and in which the tendon, as a result of its division, is left free to attach itself as it will. Here a judicious exercise of the abduction directly after the operation may serve to displace the point of attachment of the severed tendon and by causing its reattachment further back may diminish the esophoria.

Nor does the fact that an exophoria is relieved by exercising the interni proved that the condition is necessarily due to faulty innervation of the latter. In several cases of exophoria which I have treated with fair success in this manner the cause of the divergence was clearly shown to be a paresis of either the superior or inferior rectus—this condition producing a relative divergence of the eyes not because there was innervational incapacity to converge, *i. e.*, any lack of co-ordination, but because one of the adductors of the eye (superior or inferior rectus), was weakened. The weakening in these cases may be and apparently was a rule mechanical, *i. e.*, consisted in a feebleness of the muscular fiber itself, probably dating from birth and due to nondevelopment.[4]

Nor is it always the case that the exophoria is abrogated by training the adduction in the way that Dr. Gould has described. In fact, in rather more than half the cases in which I have employed the method, (and, as before mentioned, I have been

Or, taking the 200 cases in which the diagnosis was assured, those of esophoria formed 19.5 per cent (37.0 if we include the cases of hyperesophoria), those of exophoria 21.5, (40.0 including the cases of hyperexophoria), and hyperphoria 43.0, (including 7.0 of hyperphoria uncomplicated by either esophoria or exophoria).

[4] See for full discussion of these cases a paper read by the author before the New York Academy of Medicine and printed in the *Archives of Ophthalmology* for April 1894. I will here add only to the statements there made the fact that I have observed several of additional cases since.

employing it for years), the exophoria was not relieved, although the adduction was carefully and persistently exercised until the patient could overcome prisms of even 50° or 60°, bases out. A transitory reduction of the exophoria, to be sure, is the regular result of training the adduction; but cases in which an abolition of the faculty tendency lasting for any length of time is effected are by no means so frequent.

The fact is that there is no single cureall for exophoria or for any other muscular anomaly. Some cases yield to training of the muscles; some (although comparatively few), to correction of the refractive error; some to tenotomy; and some, we must reluctantly admit, are incorrigible. It will no more do to apply one method of treatment to the relief of all cases than to apply any one method for the cure of dropsy. In the one case as in the other we must first ascertain the nature and cause of the underlying pathological condition, and then apply the method of treatment that is adapted to the state found. If, as sometimes happens in hypermetropia, we have a heterophoria due to an excess of accommodative effort, we shall overcome it by the use of the appropriate convex glasses. If there is a deviation associated with a deficiency of accommodative effort, we may relieve it by exercising the adduction in the way that Dr. Gould and many others before him have done. If we have a concomitant heterophoria (and we can diagnosticate a concomitant heterophoria just as well as we can a concomitant squint), we shall in general remedy the defect only by a tenotomy. If we find that we are dealing with a paretic heterophoria,[5] our treatment will vary widely according to the cause underlying the paresis and the gravity of the effects which it produces. And so in any case, I hold that we are no longer justified in treating exophoria simply as such or hyperphoria as such, but must first find what the exophoria or hyperphoria means; must find, that is, whether it is spasm or paresis, accommodative strain or anatomical conditions that are the cause of the heterophoria; and having found this to apply then the appropriate remedy.

This subject of the treatment of heterophoria in general, however, opens up too wide a field for discussion here, and I will merely call attention to the class of cases in which I believe that

[5] Cases of this sort are more frequent than is usually supposed. Thus out of 295 consecutive cases of muscular trouble of all sorts recorded in my case-books, sixty-two, or 21 per cent, were instances of paretic squint or of a heterophoria produced by paresis of one of the elevator or depressor muscles; and of 269 persons examined for muscular anomalies fifty-six, or 21 per cent were affected with paretic heterophoria.

exercise of the convergence is indicated. It seems to me that they are for the most part, if not altogether, limited to those cases in which from some cause or other the patient is unable to disassociate his convergence and accommodation. That is, he cannot converge, even to a slight degree, without also accommodating, and hence he finds difficulty in overcoming prisms, base out, at a distance, because in looking at a distant object he cannot employ his accommodation and at the same time see distinctly. When we first practice the convergence in such a patient, we find that at first he can scarcely overcome a prisms of 10°, base out. When finally we have succeeded in getting him to overcome prisms of 15° or 20°, we discover that his vision with these glasses is only $\frac{20}{40}$ or $\frac{20}{50}$, but immediately becomes $\frac{20}{20}$ on adding, say a — 1.50 D. spherical. Now if we keep up the practice for a day or two more, we soon find that he can be got to overcome prisms of 20°, 30° or more; and, although at first he sees badly with these glasses, showing that he is still using his accommodation when converging, the time comes when even with these strong prisms he gets a vision of $\frac{20}{20}$. We have now succeeded in divorcing his accommodation and convergence, so that the latter can be called into play at will without necessarily involving the former. When this has taken place we frequently find that the exophoria and the symptoms of which it is the cause have diminished or disappeared altogether. The reason is plain. The patient has now learned to converge, *i. e.*, to use his interni efficiently in overcoming his exophoria, without at the same time using any excess of accommodation in the effort, and hence he can see distinctly and yet at the same time fix properly with both eyes. That is, the exophoria or tendency to deviate may still be present, but we have shown the patient how to use his interni so as to overcome it all the time, and that moreover with facility and without interfering with his vision. The amount of actual muscular effort implied in this is not so great but that the patient can exert it continuously, and once the facility is acquired, he has no more trouble in exerting this effort than a person with 12 D. of available accommodation has in overcoming a hypermetropia of 0.50 D. The power to do this was there all the time but the patient's ability to use it was hampered by his inability to exert this power without at the same time using his accommodation. As soon as we have taught him how to employ one without calling the other into play, he will be able to converge as well as anybody and to overcome his exophoria with ease.

A careful study of the cases in which training of the adduction has sufficed to overcome the exophoria will, I believe, demonstrate that the efficacy of the treatment is explainable upon the principle laid down in the foregoing paragraph, and the same principle defines the limitations of a method which, though very serviceable, is far from being of universal application.

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SOME TYPICAL CASES OF SUBNORMAL ACCOMMODATIVE POWER.

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THREE years ago, in a paper read before the American Ophthalmological Society, I endeavored to show that a not infrequent cause of asthenopia in young persons, by which was meant persons under the presbyopic age, is a condition for which I suggested the name "subnormal accommodative power." Whether this condition is due to a feeble, poorly developed ciliary muscle or an inelastic, unresponsive lens, I did not then, nor do I now, feel competent to determine. Either of these conditions seems adequate to explain the phenomena observed, and it appears probable that sometimes one and sometimes the other may be the efficient cause. Rules were laid down for the detection of this anomaly and for its correction by means of glasses, and several illustrative cases were related.

In the interval which has elapsed since the presentation of this paper these rules have been my constant guide in dealing with similar cases, and I have had many opportunities of testing their practical value and trustworthiness, and I may add that the additional experience thus gained has but served to convince me that the condition to which I called attention is one which the practical ophthalmologist can not afford to ignore.

As to the frequency of its occurrence, I may state that recently, in tabulating 1,615 consecutive cases of refraction and muscular anomalies met with in private practice since this condition first attracted my attention, I found that the presence of subnormal accommodative power, more or less marked, was noted 155 times, or in about $9^1/_2$ % of the total number of cases.

The whole doctrine of subnormal accommodative power, as explained in my previous paper, is based upon the observation that, while the normal balance of the lateral muscles of the eyes, as shown by the vertical diplopia test is, in distant vision, one of orthophoria, in near vision, (at the usual reading distance) the

normal position is exophoria, the relative divergence amounting, as a rule, to from 3° to 5°. In other words, with induced vertical diplopia the *true* orthophoria at the reading distance is exophoria, and orthophoria (using the term as it is commonly employed) when it exists in near vision (with vertical diplopia) is a departure from the normal. Expressed in another form, the vertical diplopia test at the reading distance, with normal eyes, should show, as compared with the result at 20′, a difference in favor of the external recti muscles of from 3° to 5°. When this is not the case, as set forth in the paper to which I have referred, subnormal accommodative power exists.

As might be supposed, subnormal accommodative power may exist apart from, or be associated with, refractive errors. I have met with it in emmetropic, hypermetropic, myopic and astigmatic eyes and also in association with other muscular anomalies. In glasses we have the means of remedying the defect. If emmetropia be present, convex glasses. for near vision, only are indicated. In hypermetropia stronger glasses for near vision than can be worn in distant vision may be called for, and in myopia weaker glasses must be prescribed for reading than would otherwise be given. The vertical diplopia test will afford us important indications as to the strength of the glasses which must be prescribed for near work. Whether convex or concave, they should be of such strength as to give, at least, the minimum amount of normal exophoria for the reading distance, say 2° to 3°.

Among the 155 cases referred to in which I have noted the presence of subnormal accommodative power a considerable number exhibited the condition in so slight a degree as not to make it of much clinical significance. From among the more marked cases I have selected the following as typical of the anomaly and illustrative of the measures adopted for its correction:

Case I. Miss G. T., aged 23, complained of asthenopia, severe and persistent headaches and poor near vision. She lived in the neighborhood of New York, and had received from a well-known oculist of that city astigmatic glasses + .25 cyl. ax. 90° for each eye, from which she had derived little or no benefit. My tests did not reveal the presence of astigmatism, nor did they show even .25 D. of Hm. The ophthalmoscope showed marked negative symmetrical abberation of each eye, (a condition, it may be remarked, which I have found frequently associated with subnormal accommodative power), but indicated less than .50 D. of hypermetropia.

The vision of each eye was — $\frac{20}{15}$ and was somewhat variable, the left eye once getting all the letters of $\frac{20}{15}$. The vertical diplopia tests were also variable in their results at different sittings, but usually gave from 2° to 3° of esophoria at 20′, and at 13″ never gave less than 8° of esophoria and sometimes showed as much as 20° to 22°. The binocular near point for J. No. 1 was 9″, at which distance it was read with much difficulty. With + 1.50 S. there was still esophoria at 13″ of 3°, with + 2. sph. orthophoria at that distance. Glasses, for near vision only, were prescribed, + 2 sph. for each eye, centre out, 3 mm. They proved entirely satisfactory and gave complete relief, but after twelve months required to be changed to + 2.25 sph. ⌒ prism 1°, base out.

Case II. Mrs. A. C. S., aged about 26, mixed astigmatism, asthenopia, especially in near vision. With accommodation paralyzed by the liberal use of homatropin the full correction was: Left eye — .25 sph. ⌒ + .37 cyl. 90°; right eye — .25 sph. ⌒ + .50 cyl. 90°. She had previously received from an oculist in Baltimore — .50 cyl. 180° for the left eye and — .62 cyl. 180° for the right eye, but had derived no relief from them. With her refractive error uncorrected the vertical diplopia test showed exophoria at 20′ of ½°, orthophoria at 13″, indicating subnormal accommodative power of at least 3½°. Glasses were prescribed for distance corresponding with the total correction under homatropia, except that — .37 sph. was substituted for — .25 sph. In near vision, in order to obtain 2° of exophoria at 13″, it was found necessary to add + 1.37 sph. to the glasses decided upon for distance. For near vision, therefore, the following correction was ordered: Left eye + 1. sph. ⌒ + .37 cyl. 90°; right eye + 1. sph. ⌒ + .50 cyl. 90°.

Case III. Mr. T. R. B., aged 19, a student at the Johns Hopkins University, had in left eye M. = 5. D.; in right eye M. = 5.50 D. with right hyperphoria 2½° at 20′.

A return of asthenopia compelled him to consult me a second time, in June, 1891. He had previously been wearing for far and near — $\frac{1}{10}$ sph. with upward decentering of right lens. With his M. half a diopter under-corrected, and with correction of his hyperphoria as follows: L. eye — 4. 50 sph.; R. eye — 5 sph. ⌒ prism 2½°, base down; he had V. = $\frac{20}{20}$ — and orthophoria at 20′, but at 13″ the vertical diplopia test showed, with same correction esophoria of 13°, indicating a very marked degree of subnormal accommodative power. With the spherical correction reduced to — 2.75 for L. eye, — 3.25 for R. eye, leaving 2.25 D. of M. uncorrected, and reducing the tension of accommodation to almost nothing, the

vertical diplopia test gave at 13″, 3° of *exophoria* instead of the previous 13° of *esophoria*.

As he had had no trouble with his old glasses in distant vision, and was satisfied with the acuteness of sight which they gave him, he was permitted to wear them still for distance, and the following correction was prescribed for near vision: L. eye — 2.50 sph. centre down, 3 mm. R. eye — 2.75 sph., centre up, 3 mm., and with these he was able to continue his studies with comfort.

Case IV. Mr. N. B. L., aged about 22, a student at the Johns Hopkins University, had Hm. 1.12 with V. = $\frac{20}{13}$. With glasses which merely corrected the Hm. asthenopia in near work persisted, or was relieved only temporarily. Owing to the presence of subnormal accommodative power, even with + 1.75 sph. orthophoria at 13″ was shown by the vertical diplopia test, exophoria of but 1° with + 2.25 sph. and of 3° with + 2.50 sph. For near vision + 2.50 sph. and for distant vision + 1 sph. were prescribed, and worn with relief to the asthenopia, these same lenses, for greater convenience, being afterwards combined as bifocal lenticulars.

ON PARALYSIS OF THE OCULAR SYMPATHETIC NERVE-FIBERS.

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SINCE Horner first called the attention of oculists in 1869 to the changes in and about the eye in consequence of disease of the cervical sympathetic nerve, a small number of authors have reported further cases. Judging from the scant literature the condition does not seem to been often seen by oculists, perhaps a little more frequently by neurologists. Many text-books do not allude to the clinical group of symptoms; others, for instance Michael,[1] and Fuchs[2] give a short description. An excellent account is given by Noyes in the latest edition of his text-book (1894, p. 436 and 469), who also quotes the older literature very fully. The more recent cases reported by Nieden,[3] Lewinski,[4] Samelsohn,[5] Adamueck,[6] Gruening,[7] and Noyes[8] agree as to the classical symptoms first observed by Bernard after division of the sympathetic of the neck in animals.

Slight narrowing of the aperture of the lids due to the relaxation of Mueller's unstriated muscular fibers in the upper and lower lid, slight pupillary contraction and increased vascularity of either the skin of the lids, the palpebral or the ocular conjunctiva, or of all three regions together have been observed in all the instances. Congestion of the retinal vessels was seen in some, but not in all cases. Retraction of the eyeball into the orbit as seen in the dog and cat after section of the sympathetic was, as a rule, not observed in man. Whenever any subjective annoyance was felt it was a feeling of slight irritation due to the increased vascularity. Most of the patients had congestion and increased perspiration on

[1] Diseases of the lids in Graefe und Saemisch's Handbuch d. ges. Augenheilkunde.

[2] Diseases of the eye. Eng. transl., 1894.

[3] *Centralblatt f. Augenheilkunde*, 1884, p. 153, and 1885, p. 321.

[4] C. f. A., 1885, p. 517.

[5] *Deutsche med. Wochenschrift*, 1888, No. 46.

[6] *Centralbl. f. A.*, 1889, p. 426.

[7] New York Eye and Ear Infirmary Reports, Jan. 1893.

[8] Diseases of the eye, 1894, p. 469.

the same side of the face as evidence of paralysis of the vasomotor fibers of the sympathetic nerves. But the latter fibers were not involved in all cases. Indeed, Bernard has shown that between the spinal origin and the inferior cervical ganglion the ocular and the vasomotor fibers are anatomically separate and distinct.

It has been claimed by Morat[9] and Doyon that the sympathetic nerve exerts an inhibitory influence on the ciliary muscle and constitutes thus the antagonist of the third nerve in the function of accommodation. They observed the reflection of a light from the anterior surface of the lens in dogs during stimulation of the sympathetic in the neck, and claimed to have seen the image increase in size, especially while an accommodative effort had been maintained by eserine. The observations could not be confirmed by the use of more exact measuring methods in the hands of Jessop,[10] Langley[11] and Anderson, and Heese.[12] Morat and Doyon also try to prove their view by reference to clinical cases of Jany (1874), and Schliephake (1876), in which the symptoms of paralysis of the cervical sympathetic nerve were accompanied by spasm of the accommodation while in two observations by Eulenburg (1869 and 1873), evidences of sympathetic irritation coincided with paresis of the accommodation. Neither any of the other reported cases nor my own support the view that the sympathetic nerve influences the accommodative mechanism.

The cause of the disease of the cervical sympathetic nerve was given in some of the reported cases as tumors or enlarged glands in the region of the neck, wounds implicating the nerve and a few times aneurysm of one of the large arteries. In most instances, like my own, no lesion could be discovered as the cause of the nerve disease. With the exception of the oldest case reported by Willebrandt in the first number of Von Graefe's *Archiv. f. Ophth.*, 1854, in which cervical glands shrank under the use of iodide of potassium, the disturbance has been always of a permanent character and was not influenced by treatment. With no prospect in view I have hence not attempted any treatment in my cases. As far as can be learned from the published histories, as well as the cases observed by myself, paralysis of the cervical sympathetic nerve is neither the precursor of further nervous trouble, nor does it lead to any secondary changes.

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[9] *Archives de Physiol. norm. et path*, 1891, p. 507.

[10] Bericht über den vii. Internat. Ophthal. Congress, 1888, p. 188.

[11] *Journ. of Physiology*, xiii., p. 554.

[12] *Arch. f. d. ges. Physiologie*, Bd. 52, p. 535.

Accident has permitted me to see within a short time three instances of sympathetic paresis, of which the following are the essential histories:

I. Mr. H., aged 19. January 31, 1893. Nine years ago had follicular conjunctival catarrh in both eyes. Since that time he has not complained until last year when his eyes gave him some discomfort for a short time. From this he has recovered, but he has noticed that the right eye is generally less open than the left; that it is sometimes somewhat bloodshot and that while in the wind he has to wipe his right eye more than the left. His health is perfect.

The left eye is normal in every way. The right eye is slightly more covered by both upper and lower lids than the left. The movements of the lids are normal, but they can not be separated quite as widely as on the other side. The skin of the lids is a trifle more red than left. There is also more vascularity of the conjunctiva of the lids than left, and the color of the sclera is not as pure a white as in the other eye. The pupil is a trifle narrower than the left one, but its mobility is normal. Vision normal, and ametropia like in the right eye. Ophthalmoscopically both eyes are normal and alike.

In short, the right eye showed an appearance as if irritated. As no cause could be found to account for this condition, either locally or in the nose or in any other lesion which could affect the sympathetic nerve, I searched whether the trouble might not be due to closure of the lachrymal duct, since he stated that his right eye watered more easily than the left. I found that a Bowman probe No. 1 could be introduced through the (dilated) entrance only with much difficulty, but by making the probe the cathode of an electric current (four milliamperes), I succeeded in passing it.

By passing the electrolytic probe at intervals of four to six days several times the overflow of tears was stopped. But the condition of the eye did not change. I saw the young man repeatedly during the next few months and found slight variation in the fullness of the vessels, in the drooping of the lid, and the pupillary contraction at different occasions, but the symptoms, as a whole, remained permanent. At no time was there any difference in the vascularity or the perspiration of the two sides of the face.

II. Mr. L. K., aged 48. November 28, 1893. Had good health until this summer, and has never had syphilis. About June he began to suffer from a steady but not severe diffuse headache of the left side of the head. This has ceased since the last six weeks. During the three or four summer months he felt weak without

being actually sick, and his weight ran down from 210 to 185 pounds. The past month he has been regaining his strength and has ceased losing weight. He has had very little medical treatment, and no diagnosis was ever stated to him.

Since his sickness his eyes have begun to feel weak on reading. His left eye, however, feels continuously *irritated*, but without real pain. It is often bloodshot and appears smaller than the right eye, especially when he is excited. He also thinks his sight is not quite as satisfactory left as right.

The patient is now in apparently good health and free from any pain. His urine was found to be normal. The lids on the left side are a trifle narrower than on the right. The palpebral skin is also more vascular. The conjunctiva is equally pale in both eyes, but the scleral veins are more conspicuous on the surface of the left eye. The left pupil is smaller than its mate, but its mobility is normal. The ophthalmoscope shows no difference between the two eyes. R. E., V. $\frac{20}{60}$ with C. — 1.25 ax. 90° = $\frac{20}{25}$; L. E., V. $\frac{20}{45}$ with C. — 1.25 ax. 90° = $\frac{20}{25}$. He can accommodate up to 20″ with either eye, and accepts for reading sph. + 1 in addition to the cylinders. The increased vascularity is noticeable on the auricle as well on the lids of the left side. No anomaly can be found in the neck over the course of the sympathetic nerve. The patient was given appropriate glasses, C. — 1.25. ax. 90° for distance; C. + 1.25 ax. 180° for reading, and a trial of antipyrin in two daily doses of 1.00 was advised.

Two days later he reported that he was satisfied with his glasses, but the objective conditions were unchanged.

III. Mrs. K. April 24, 1894. A healthy lady, aged 32, came on account of inability to keep the right eye open as wide as the left. Since two years the right upper lid has been drooping, especially when she is tired. Steady use of the eyes gives her a somewhat tired feeling in both. She complains also of attacks of hemicrania mostly right-sided, but sometimes also left, which within the last two years have increased in frequency up to one or two attacks per week.

The right lids cannot be opened as far as on the left side. The edge of the upper lid is slightly more vascular right than left, otherwise no increased injection is noticeable. The two pupils are about alike. Ophthalmoscopically both eyes are normal. With the ophthalmometer I found As. 0.75 in R. E. and 0.50 in L. E. against the rule, but subjectively I could not determine any astigmatism with certainty. Her vision was $\frac{20}{30}$ in either eye, and

she could accommodate up to seven inches. For reading she accepted + 0.75 D. Neither that day nor on subsequent occasions was there any difference in the appearance of the two sides of the face.

The next day I used homatropin. The evidences of paresis of the sympathetic fibers were much more marked than the previous day. The eye was more covered by the lids, the skin of the lids was reddened, and the right pupil decidedly smaller than the left. The right pupil yielded more slowly to homatropin than did the left, but ultimately both were equally dilated. With the wide pupil, however, no satisfactory determination of the refraction was possible. She refused anything over one-half dioptry, cylinder or spherical, but below that limit her answers were contradictory.

Five days later the symptoms of sympathetic paralysis were again less pronounced than at the last examination, but more so than when seen the first time. They evidently fluctuated with the condition of her nervous system. At this examination the right eye accepted a plus cylinder of 0.5 D., (axis vertical), with decided certainty, while the left was very slightly benefitted by a 0.25 cylinder. On account of the migrain I prescribed these glasses which seemed comforting to the patient, and directed them to be worn continuously. She reported eight weeks later that she had been free from headache since she got the glasses, except during the menstrual period. The evidences of disease of the sympathetic nerve were unchanged, but the vasomotor fibers of the face were at no time involved.

65 Randolph Street.

WHEN AND HOW SHALL WE CORRECT FAULTY EQUILIBRIUM OF THE OCULAR MUSCLES.

By Edward J. Bernstein, M. D.
of Baltimore, Md.

ABOUT four or five years ago Dr. Stevens, of New York, created a great stir in the ophthalmological world by his advocacy of a system of graduated tenotomy. Like many others, I took a deep interest in his writings. Just then I was preparing to go abroad for study, and whenever an opportunity presented itself I questioned the surgeons whom I met in regard to this. Almost to a man, every French, German or Austrian oculist ridiculed the measure as an absurdity. And to any one who has observed the absolute lack of result, in operations for strabismus, until *every* fiber of the faulty tendon is severed; this criticism appeals.

I may here say, while I am not willing to abide by the dictum of our German confreres in matters of refraction as applied to American patients. I think I am safe in saying their opinion on matters surgical are universally respected and accepted. Even at Moorfields, where the study of refraction has reached such a high standard, I could not find one of the gentleman there who gave the least credence to any permanency of result from the operation of graduated tenotomy, nor indeed was there any particular stress laid upon the detection and correction of faulty muscular equilibrium as that question is comprehended here in America.

Thus it is that my own experience with this subject has been limited to the past eighteen months and to my own private practice. No doubt most of us would have answered my questions had I put them three or four years ago as Dr. Stevens suggested; to-day, I very much doubt if many seriously consider it a remedial agent.

During the course of this paper I shall refer to the various methods which the larger study of this subject have called forth.

Let me start out by saying that the more I study this subject the more I am convinced that every case must be considered individually and that each is a law unto itself.

Any attempt at wholesale dealings with this, as with any other defect, cannot be considered worthy of emulation. I am reminded here of an axiom of a very careful teacher and surgeon. "Beware

of the man with one remedy and one instrument for all cases." One is struck, in view of this, by the uniformity of good results a certain gentleman reports, whose wonderful success as obtained from the almost universal need for $\frac{1}{4}^{\circ}$ prism in hypophoria was, to say the least, truly marvelous. To be generous we are forced to believe him singularly fortunate or else to be riding a big hobby.

I have ordered $\frac{1}{4}^{\circ}$ prism in hypophoria *but once*, and then my patient carried the prescription in his pocket for some time, and on his next visit, on an entirely different errand, I found that his old spherical glasses were giving him every comfort though the former hypophoria still existed.

It was my lack of any definite knowledge of heterophoria which I must thank for my conservative dealing. I am happy to see my own conclusions are those now held by numerous workers on the subject.

In a paper before the Am. Ophth. Soc. Dr. Murrell,[1] of Little Rock, Ark., speaks of the relative frequency of faulty equilibrium and the rarity of annoyance from them after ametropia was corrected. He found a large percentage to show lateral deviations of a few degrees which were physiological.

Repeated tests show *these* even to be variable. By putting accommodation in obeyance we may convert an esophoria apparent or an orthophoria real into an exophoria. Heterophoria are most frequently annoying in the *neurotic* individual.

Dr. Stevens claims instability of lateral balance being at one time exophoria, at another esophoria, to indicate *invariably* hyperphoria. This is a very valuable suggestion but I doubt its invariability.

We know that vertical deviations are the most distressing and can readily understand how they may so destroy equilibrium of the eyes as to give rise to variable esophoria and exophoria. but they are not the only conditions. In fact, hyperphoria seems sometimes to be an after production of esophoria or exophoria, and correcting the latter by an operation will very largely remedy the former. If prisms are at all accepted, Dr. Murrell corrects the total hypophoria, *over* one-half of the exophoria and *less* than one-half of esophoria. Others correct one-half of the hypophoria and from one-quarter to one-half the exophoria or esophoria. (Dr. A. E. Prince.)

Dr. G. C. Savage distinguishes between a true esophoria dependent on natural structure of the muscle or its attachment,

[1] Journal Am. Med. Assoc., Oct. 28, 1893.

and pseudo-esophoria dependent upon the relationship between the centers of accommodation and convergence. He likewise distinguishes two forms of exophoria. His method of correction is by an adaptation of muscular gymnastics as applied to the larger muscles, namely by an alternate contraction and relaxation of muscular effort. This he accomplishes by placing before the eye a weak prism which slightly exaggerates the trouble, asking the patient to gaze through this glass, alternately at an object held at the reading distance (25 to 33 cm.), then at an object at 6 m., then raising the glass and looking at infinity without it, each step requiring five seconds. The patient has two seances per day of ten minutes each.

The prisms are gradually increased in strength after five days use of each combination until a certain prism is reached (4° to 8° each eye), which the patient now uses till cure is established. If the patient be myopic a part of his exophoria, and in some cases, the whole of it will be overcome by a full correction of myopia; whereas, in hyperopia a full correction or a partial correction will make the patient worse by adding a pseudo-exophoria to his true exophoria.

While speaking of muscular troubles I wish to refer to the excellent paper of Dr. Theobald on "Subnormal Accommodative Power." While it may be familiar to most of us, a repetition of "the most salient points may not go amiss." There is a condition in young persons which is as capable of producing asthenopia as insufficiency of the externæ muscles which we may term "insufficiency of the ciliary muscles." This may occur in conjunction with ametropia and heterophoria. Its existence is not to be determined by Jaeger's types, the smallest of which are usually read with facility. The parallelism, of which we ordinarily speak, between convergence and accommodation, is not as absolute as one would expect. For, if by means of a prism (4° for D. and 7° for N.), vertical diplopia be induced, we shall find *in accommodation for near objects* this parallelism is not maintained. A relative divergence occurs, so that the eyes accommodate for a nearer point than they converge for. In emmetropic persons below the presbyopic age, and with normal muscular balance it seldom falls below 3° and is not apt to exceed 5° or 6°. This relative divergence occurs only in N. V. and is entirely normal and should not be mistaken for a true exophoria.

In normal eyes there should be orthophoria for D. V. and exophoria of 3° to 6° N. V. under the above test. If there be more

than 6° or less than 3° at reading distance there is ground for suspecting some abnormality of muscular or refractive condition. If an excess: Insufficiency of the internal recti, hyperesthenia of the ciliary muscles and myopia suggest themselves. In myopia the relative divergence is excessive because there is little or no tension of accommodation, for this means, of course, that, owing to the correlation of the two functions, the interni are but feebly stimulated to contraction.

When the ciliary muscles are abnormally strong or the internal recti weak the same result happens, because in the first instance the exceptionally strong ciliary muscles require but a feeble nervous stimulus to enable them to perform their work, and this is accompanied by a correspondingly feeble stimulus to the interni; and in the second instance the weak interni receive only the stimulus which attend the ordinary accommodative effort, whereas, something more is needed than is the case for normal muscles.

If *less* than the normal amount of exophoria be present it denotes insufficiency of the ciliary muscles or subnormal accommodative power so that orthophoria for D. V. and near or only 1° or 2° exophoria, for the latter is to be regarded as conclusive proof of subnormal accommodatory power. His rule then is whatever the muscular balance may be in D. V., the vertical diplopic test at 6 m. should show a difference in favor of the internal recti as compared with the test at 33 cm. of at least 3° and generally 4° to 5°.

For example, if asthenope has esophoria of 2° at 6 m. in normal accommodation, we should find an exophoria of 1° or possibly 2° or 3°; again if distance test gives an exophoria of 3°, the near test should give 6° or 9° exophoria.

If, however, one has as much esophoria for near as for distant (and *a fortiori* if one has more), or in case there be as little or less exophoria at near as at distant test, we would conclude there was subnormal accommodation. To correct this, ascertain by trial the weakest convex glass (spherical) which gives the normal exophoria (2° to 3°) at 33 cm., and order this glass for N. V. Should the glass bring the binocular punctum remotum too close to the eye, try to overcome this difficulty by decentering the spherical glass outward as much as possible. Thus bringing over-action of internal recti and at the same time lessen the work of the weak ciliary muscles.

This is a very valuable hint and will often aid us to effectually dispose of a certain class of cases.

I wish to call attention here to the very valuable paper of Dr.

Edward Jackson[2] on the prismatic effect of the decentering of spherical lenses.

In a very recent article on exophoria, Dr. George M. Gould[3] makes a very strong plea in favor of gymnastic exercise, differing from that of Dr. Savage in that he tests in exophoria the adducting power of the interni at 6 m. and requires the patient to alternately look through prismatic glasses, base out, double the strength of their maximum adducting power, *i. e.*, of only 10° prisms can be overcome, he places two prisms each of 10°, base out, in the spectacle fronts for the practice, the patient first looking at an object near at hand which is gradually withdrawn to 6 m.—the patient fixing object all the time.

He places the necessity for prisms or gymnastic exercise on this power of adduction or abduction of a certain amount of prismatic interference; however much I like his method of muscular exercise I cannot agree with him in his selection of cases justifying this measure. According to him one should have a power of adduction of 30° to 35° and abduction of 6° or 8°, and a manifest exophoria of 6° or 8° for D. V. In the other place he says a proportion of about 4 °or 5° to 1 and an esophoria at twenty feet of from ½° to 4° or even 5°, I call normality.

Surely this is margin enough to satisfy the least exacting; from a manifest exophoria of 6° to 8° to an esophoria of 5° for normal. Dr. Theobald holds that orthophoria for D. V. and an exophoria of 3° to 5° for near, to be normal.

In my humble opinion that amount of heterophoria and just that amount is normal which leaves the individual no asthenopia after his ametropia is fully corrected, and attention to his general condition, not overlooking such organs as are known to cause reflex asthenopia has been given. I have seen as low as 2° exophoria or esophoria, (and nearly always that amount of hypophoria), require prismatic correction, and I have also seen exceptionally high degrees of all manner of heterophoria be totally disregarded after ametropia was corrected. I shall cite a few cases in a moment to show on what I base this assertion. As to the necessary ability to overcome a given amount of abduction or adduction in order to be free from troublesome heterophoria, it strikes me our knowledge is still too crude for any fixed rules. In my own person I have repeatedly tested my own powers and I find that I have an exophoria which varies, according to whether I am in condition or

[2] Trans. Am. Ophth. Soc., 1889.

[3] Annals of Ophthalmology and Otology, January, 1894.

fatigued, from 2° to 5°, and I can not overcome more than a prism of 9°, base in, or a 10° prism, base out. I have V. $\frac{2}{2}$ and can read indefinite periods without fatigue. This is not exceptional, I have tested it in others who did not complain of asthenopia, To determine heterophoria in the distance I place the patient 7 m. from the small flame of the Argand burner, which (burner) is directly in the center of a black board on which I have drawn white lines 6 cm. apart in the vertical and horizontal directions. The *room is darkened* and before one eye a ruby glass is placed, before the other a Maddox bar. The patient now looks at the light with both eyes. With the red glass he sees a red flame directly in the center of the board, with the other eye he sees a white indistinct bar of light, and the number of lines apart these two images are seen indicates in prism diopters the amount of deviation and thus the amount of heterophoria expressed in prisms necessary to correct the defect. The *side* to which the line of light is thrown indicates the *kind* of heterophoria.

I do not find the least difficulty in obtaining accurate knowledge from the most obtuse or nervous patient by this method.

I tried for a short time the + 20 D. spherical lens behind a perforated disc, (as suggested by Dr. Stevens), but I found this too unsatisfactory as the slightest jar the patient received or your own inability to accurately place the lens, would call forth (according to this), insufficiencies oblique recti or what you would. It is beautiful in theory, but faulty indeed in practice. As I said before, I do not rely on the power possessed by the individual as expressed by his ability to overcome prisms. This power is largely one of education.

"I do not deny the possibility of the existence of a positive weakness of the interni that will give a separation of the double images in convergence, which is not apparent at the test at infinity, but I think such a condition must be rare."[4]

Now as to the necessity for operations, this, it seems to me is indeed a rare one; still there are cases beyond any help other than complete tenotomy.

As for graduated tenotomies, Dr. Roosa, Dr. A. E. Davis, (*N. Y. Med. Journal*, October 8, 1892), among a host of others, have long placed no reliance in the method.

Dr. F. W. Marlow[5] says: "I have several times seen a tenotomy which fully or slightly over-corrects a deviation at the time of the

[4] Dr. S. M. Burnett. Med. News, February 6, 1892.
[5] N. Y. Med. Journal, June, 1892.

operation, followed in a few days (and before the contraction of the cicatrix could have taken place), by a manifest error equal, or nearly equal to the original error. But to show that partial tenotomy can effect a permanent change in the position of rest he cites a few cases. I would ask anyone interested to read the history of these cases and see whether he would deduce a like conclusion.

In 150 cases of refraction every one of which I examined for muscular balances in whom only fifty had orthophoria, I have found it necessary to correct heterophoria after ametropia was fully corrected in but fifteen cases.

In five *additional* cases heterophoria continued to be annoying after the focal error was overcome and only ceased to annoy when the nasal causes had been abolished. (See Med. News, 1893).

Seven required correction for various grades of exophoria by prismatic lenses.

Four for hypophoria and three for esophoria.

One only resisted every means but complete tenotomy of the superior rectus of one eye and the inferior rectus of the other for a hypophoria of high degree.

Among the really marvellous degrees of heterophoria which patients will entirely disregard, I relate the following:

Case 1. Mr. I. L. M. complained of diplopia and asthenopia which was particularly annoying; V., R. E. $^6/_9$; V., L. E. $^6/_9$. Under mydriasis his ametropia was found to be: R. E. + 0.50 D. cyl. ax. 15° nasal = $^6/_6$; L. E. + 0.50 D. cyl. ax. 15° temp. = $^6/_6$. He has a hypophoria of $^1/_2$° in the right eye and an esophoria of 24° (twenty-four). I corrected only the astigmatism, leaving the external recti alone as at that time (sixteen months ago), I felt too insecure in my knowledge of muscular troubles, and I knew I could have the patient under observation whenever I wanted him, and if I found it necessary could institute what measures I saw fit later on. The patient was apprised of his trouble and expressed a willingness to submit to operation if I saw fit, The occasion has not yet arisen though I can still make out 14° esophoria.

Case 2. February 20, 1893. Mr. Dan F., aged 33, has just recovered from an attack of typhoid fever and now suffers from headache and diplopia when he reads his music. Refractive error was R. E. + 0.75 D. cyl. ax. Vert.; L. E. + 0.50 D. cyl. ax. 45° nasal. Has esophoria of 14°. Cylinders were ordered and general tonics in hope that the latter would overcome his loss of equilibrium.

April 21, 1894. He has gotten along splendidly with no trouble whatever. Merely came at my request. He has still esophoria of 14°.

Case 3. December 22, 1892. Mrs. K. was sent by her brother, a physician of this city, for asthenopia. She had mixed astigmatism, (which had not been corrected), which was corrected by R. E. + 1 D. sph. ○ — 2 D. cyl. ax. 80°, temp. = $^6/_5$; L. E. + 1.25 D. sph. ○ — 2.25 D. cyl. ax. 80°, nasal = $^6/_5$. Besides this she has a hypophoria of 4° which is uncorrected and gives no trouble.

Case 4. Mrs. W., the wife of a physician, had mixed astigmatism in L. E. and comp. hyper. astigmatism in R. E. in conjunction with 1° esophoria and a hypophoria of 7°. The ametropic correction gave full satisfaction, the patient reading with great comfort.

Case 5. January 15, 1894. Dr. A. S. A., V. $^6/_5$ each eye, (diplopia). Refraction emmetropic. Has an hypophoria of 5° in R. E. and an exophoria 7°. Notwithstanding the prevailing opinion I decided to correct the exophoria only. The patient wears 3° prism, base in, before each eye and has absolute comfort.

These are but examples; I could cite others but I would draw out unnecessarily this already too lengthy article.

In the face of these how can we talk of fixed rules?

In conclusion, let me again state that from what I can learn from my own rather limited experience and the writings of safe men is, that heterophorias are present in a large proportion of cases which seek our aid for asthenopia. In by far the greatest majority attention to ametropia will be all that is necessary to give perfect comfort, and it is this for which our counsel is sought; our patient cares very little whether he has an exophoria, esophoria or hypophoria, so long as it does not annoy him.

In a few cases prisms should be ordered for constant wear or possibly the gymnastic exercise may prove the better method, (on this I cannot yet venture an opinion, though it seems most rational). In a still smaller number, resort to complete tenotomy will be found the only means of cure.

800 Madison avenue.

INSANITY FOLLOWING A MYDRIATIC—CAUSE OR COINCIDENCE?

By Lewis H. Taylor, M. D.,
of Wilkes-Barre, Pa.

IN presenting the history of what was to me an interesting and anxious case I am led to put a part of the heading to my short paper in the form of a question, because it is by no means always easy to determine whether certain phenomena observed are to be regarded as effects following a cause, or merely as sequences which would have occurred with or without the supposed cause.

The ophthalmologist, as well as the general surgeon, is frequently brought face to face with profound mental disturbances following slight operations, and even so simple a procedure as the use of a mydriatic may in a highly nervous person produce, or at least be followed by, a train of symptoms at once perplexing to meet and difficult to manage. I have seen two cases of marked hysterical delirium following the use of duboisin, almost amounting to acute mania, but in a somewhat extended experience with the use of atropin in refraction work, I have never seen any ill effects follow its use, nor any nervous disturbance sufficient to call for other than a mere passing notice, except in the case I am about to relate:

Miss Mary M., aged 30, came to me October 23, 1890, at the suggestion of her physician, on account of severe headaches from which she had suffered for a long time. These were thought to be of malarial origin and she had been treated on this supposition for many months without avail. Vision at first examination was $\frac{8}{60}$ in each, while the ophthalmoscope showed myopia and myopic astigmatism. After making the usual tests of her eyes, and a trial of glasses without mydriatic, I gave her a four grain solution of atropin to be used three times daily, with instructions to return for tests for glasses. She came the next two days in succession and was tested without difficulty and without any special evidence of nervousness, selecting O. D. — 3. sph. ⊂ — 1 cyl. ax. 180° and in O. S. — 2 sph. On the second day while sitting in my waiting room she began to talk in such an excited and incoherent manner that I was requested to see her immediately. Upon taking her into my private office I found her greatly excited and weeping over fancied trouble that she had caused myself and her friends at home. Her sister who was with her stated that she was well enough in the morning and entirely rational, but seemed somewhat excited and nervous before starting to my office. I gave her a sedative and sent her

home in my carriage, and called at her house later in the day. I found her semi-rational, but every now and then breaking out in fits of weeping which she could not control. This condition continued and a nurse was procured who watched her faithfully, and she also received careful medical attendance from her family physician, a gentleman of wide experience and great ability. Her trouble took the form of melancholia from which she did not rally, and after some months careful nursing and treatment it was decided to remove her to an asylum for the insane, where she still remains.

After the first outbreak I learned from her friends that she was the chief support and stay of her family, doing the work of the household far beyond her strength, as well as bearing the great mental strain of nursing her mother who for some years had been insane, and had been cared for at home until a very short time before the daughter's breakdown, when she had been removed to the same asylum in which the daughter was subsequently treated.

The patient came to me in reference to her eyes soon after her mother's removal to the asylum, because this was her first opportunity for the treatment which her physician had long recommended.

The question suggested is this—had the use of the mydriatic any influence in precipitating the attack of melancholia? We all know the profound impression occasionally produced on highly nervous individuals by so simple a procedure as the use of a mydriatic, and the oculist may sometimes be placed in an unpleasant position when such an effect occurs in an unreasonable or ignorant patient. In the case I have mentioned we must consider a highly nervous over-worked daughter of an insane mother, the daughter herself probably for months on the border-land of insanity, and liable to become insane in a short time without any special exciting cause, or to be mentally unbalanced from any sudden shock, either slight or severe.

A number of interesting cases of insanity following gynecological operations have been detailed by Dr. Thomas before the New York Academy of Medicine. Other cases following surgical operations, the use of anesthetics, etc., have been reported. The patient I have described could as well have been an example of the class described by Dr. Thomas had an operation been performed at the time the mydriatic was used.

I am inclined to think the use of the atropin merely a coincidence though I am not prepared to say that it did not have some influence as the exciting cause in precipitating the attack. I am happy to say that no blame was placed upon the oculist by the friends of the unfortunate lady, nor did they regard the treatment of the eyes as in any way the cause of her mental disturbance.

REPORT OF A CASE OF SUPPURATIVE DISEASE IN THE MAXILLARY ANTRUM COMPLICATED WITH ABSCESS OF THE LOWER EYELID AND ATTENDED WITH SEPTICEMIA WITH TWO ILLUSTRATIONS.[1]

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E. S., aged 7, brought to me by her mother, March 10, 1894, on account of a very large swelling of the right lower eyelid, completely closing the eye and extending over cheek, which had existed for about ten days growing rapidly larger, despite the application of a salve ordered by the medical attendant. There was a history of "matter running from the nose" for several months before, when it partially ceased, and a few days later the swelling of the face appeared and the other symptoms set in. The child had a number of chills before coming to me and was evidently seriously ill.

Status Presaens: The child dull and stupid; skin yellow; slight pustular eruption on the face and body; temperature 101°, higher in the evening, in fact all signs of beginning septicemia. Right cheek and lower eyelid greatly swollen, (see Figs. 1 and 2); pus distinctly present in the latter; pre-auricular and cervical glands swollen; the periosteum of the upper jaw on that side greatly swollen; the gums bleeding, and abscess in the roof of the mouth with much deep-seated pain over antrum.

The nasal passages were full of a muco-purulent discharge which, when cleared away by Seiler's solution, showed purulent rhinitis. The two molar teeth (milk), were decayed, although

[1] Photographed by Sam'l French, M. D.

they had not given rise to any discomfort. The eyeball was normal in every respect. From these conditions suppurative disease of the maxillary antrum was diagnosed and the patient given quinin and sent to the Wisconsin general hospital.

Operation: March 11, Dr. F. E. Walbridge assisting. Chloroform anesthesia, The pus was evacuated from the lid abscess in the line of the intra-orbital fold so as to leave as small a scar as possible. An opening was made with the drill through the alveolar process of the upper jaw above the molar teeth and enlarged with a spoon. The bone was soft and mushy, coming away easily. But a few drops of pus were evacuated from the antrum as apparently it had mostly escaped from the opening in the cheek

(FIG. 1.) (FIG. 2.)

from which about an ounce had been taken. (Communication of the two cavities was not, however, at any time clearly established). Dr. Walbridge extracted the loose teeth and I then washed out the abscess cavities with 1-5000 sublimate solution, injected peroxide of hydrogen and inserted catgut drain in the cheek, and iodoform gauze in the antral opening. Recovery from anesthetic uneventful, temperature normal the next day.

On the next day a free discharge of sanguinous pus came from the opening in the jaw, and as this was sufficiently large a rubber drainage tube was inserted. More pus had accumulated in the lower lid. A mouth wash of boric acid, nasal spray of Seiler's solution, and cod liver oil, and syrup of iodid of iron were ordered, under which, in connection with daily cleansing of the

two abscess cavities with 1-5000 sublimate solution and injection with peroxide, that of the lower lid healed in two weeks while the discharge persisted from the antrum for nearly six weeks, gradually diminishing until at the end of that period the opening was allowed to close, and since that time neither have recurred. The purulent rhinitis has been cured by the cleansing, and the child is now in good health. The incision in the lower eyelid left a very small scar adherent to the malar bone and there has been some distortion of the alveolar process which will eventually show in irregularity of the permanent teeth.

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THE HALO SYMPTOM IN GLAUCOMA.

By S. O. Richey, M. D.,
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HALO is classed among the prodromata of glaucoma: it may occur later in the progress of primary simple glaucoma. Some subjects of glaucoma, more observant than others, mention it without suggestion from the physician. In many instances it is not noted, or little importance is attached to it. A few attempts have been made to explain it. DeWecker thinks it "due to very slight alterations in the epithelial layer of the cornea, produced by temporary increase of pressure." Wolfe suggests that it "may be owing to dilatation of the pupil, to change in the lens, or to disturbance in the circulation." Neither "disturbance of the circulation nor dilatation of the pupil," when they exist, under other circumstances, seem to cause the phenomenon.

"Alteration in the epithelial layer of the cornea," and "change in the lens" are phrases of vague significance, the exact meaning of which may be only surmised, except that Dr. deWecker qualifies his statement by the expression "is analogous to a similar phenomenon witnessed in most cases of conjunctival catarrh where there is irregular desquamation of the epithelium." In conjunctival catarrh this peculiarity is rather due to diffraction of rays of light by globules of secretion on the surface of the cornea, as it disappears when they are removed. Moreover, cocain which disturbs the corneal epithelium *lessens* conjunctival secretion, and dilates the pupil, does not seem to produce the halo. Let it be further suggested that constant slight changes in the corneal epithelium are physiologically present *without* the phenomenon; therefore, we must look for some other explanation. Dabrowolsky, of St. Petersburg (*Archiv. of Ophth.*, Vol. XV., p. 267, 1886) assumes that the glaucoma halo "depends upon irritation of the retina and optic nerve by hyperemia," in support of which he cites a personal experience while in a Russian bath. The rainbow rings became even more distinct when he entered a cooler room. He continues, "for the last few months I have constantly seen these rings around the lamplight in the evening. There is no noticeable increase of tension and the visual acuteness is $\frac{25}{20}$. Tension of accommodation always renders them (the rings) more

distinct. As the cause of glaucoma must be in action previous to increase of tension, or diminished acuteness of vision, and as the halo is a prodrome, Dr. Dabrowolsky's eyes must rest under suspicion of inherent tendency.

The halo is never constant, but appears and disappears to recur again, and with increasing frequency as the disease develops. At one time it may be a corona; at another, it appears in the shape of varicolored *sparks* of light. This intermittence and change of form would indicate that the cause is not persistent, that at times it lacks force, or distribution. Pressure *upon* the globe will produce a ring of colored light, or a luminous spot, always opposite to the point of pressure. The halo may be present in glaucoma with seeming normal intra-ocular tension, and may be absent during increased tension; gradual, steady pressure will not produce sparks of light. The cause of the halo would seem not to be in the retina itself, but in the media anterior to it. Its variability suggests the aqueous humor, or some surface subject to the influence of the aqueous humor, for it is in the *serum* of the blood that the chief deviation from the healthy standard is perceived, products of excretion which have not been eliminated. (Garrod).

The laws of nature are undeviating; the law of gravitation, terrestrial or celestial is the same; so with the law of light. The lunar halo is a familiar object, the cause of which does not exist in ourselves nor in the moon, but in the intervening media whose character changes. The Descartes theory of the encircling lunar halo was accepted by Marriotte, Dr. Thomas Young and Sir Isaac Newton, and remains to-day the unquestioned explanation.

According to Descartes, it is owing to the refraction and reflection of rays of light by minute snow and ice crystals in the upper strata of air, and occurs in the presence of the cirrus, or ice-cloud.

Professor Cleveland Abbe explains the arrangement of colors in a circle of 22° radius, the inner edge red, the outer edge blue, to be "light polarized in direction of tangent to circumference; it is formed by light passing through the alternate faces of hexagonal ice-crystals in the direction of minimum deviation through the base and sides of right prisms."

The prevailing arrangement of colors in the glaucomatous halo is red in the outer margin and bluish-green in the inner margin, the reverse of the lunar halo. [1] The difference in arrangement of

[1] The transposition of the colors of the halo is very strong evidence that the cause of the halo in glaucoma is to be looked for posterior to the iris, in accordance with the disposition of rays of light passing through the aperture of a screen.

colors is owing to a difference in the position of the refracting crystals relative to the eye; in one case, posterior to the pupil; in the other, external to the eye.

"Sodic chlorid + urea forms shining rhombic prisms," (Landois & Sterling Text-book on Physiology, second Am. edition, page 432). Acid sodic urate appears as a brick-red deposit, more rarely gray or white, in rheumatic or febrile conditions. Microscopically, it is completely amorphous, consisting of granules which sometimes have spines on them. The potash salt is the same. They are easily soluble in warm water. (Vid. Suf. page 435). As the menstrua cool they are precipitated.

When the urates in the blood are in excess (uric acidemia), the same influences which determine their presence in the synovial fluid of the joints and their precipitation upon the serous surfaces operate in the eye which is more exposed to vicissitudes of temperature. Hence, variation in glaucoma halo, with variation of urates in the blood, might clearly occur without present change of intra-ocular tension.

The glaucoma halo *might* "depend upon irritation of the retina and optic nerve," not caused by simple hyperemia, but by precipitated urates; or, it may be due to the *presence* in the aqueous, or vitreous, humor of urates in the shape of rhombic prisms or amorphous granules (with or without spines), with power to cause diffraction of light. The prisms formed by sodic chlorid + urea at least have this faculty.

A CASE OF ORBITAL CELLULITIS FOLLOWING TENOTOMY FOR SQUINT.

By Charles H. May, M. D.
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ALTHOUGH the text-books mention the occurrence of orbital cellulitis after operations upon the eye, this accident certainly must be rare after tenotomy when strict antiseptic precautions are observed. Perhaps it occurs oftener than the absence of published cases would lead us to believe; for naturally, even though the operator considers himself blameless, he is very apt to keep such cases quiet. Hence the following report is interesting. It gave the writer some anxiety. When the inflammation had been successfully combatted, a divergent quint was present as a result of the failure of the divided muscle to attach itself properly. Some atrophy of the optic nerve also resulted and produced some contraction of the visual field though no diminution of the acuteness of vision. A reddish mass appeared beneath the conjunctiva, at the seat of the tenotomy some time after the operation; this was excised and microscopical examination showed it to consist of granulation and muscle tissue. At the present time the eyes are perfectly straight and no damage has resulted.

M. R., a boy 6 years of age, was brought to my office for examination November 24, 1891. He had an alternating internal squint of about four lines; this had existed several years. V., O. D. $\frac{20}{20}$, O. S. $\frac{20}{40}$.

November 27. The parents having consented to a tenotomy, I divided the left internal rectus. Ether anesthesia. Full tenotomy. There was much more than the usual amount of hemorrhage, but otherwise nothing abnormal. The result of this operation was to diminish the squint but it soon became evident that a second tenotomy would have to be done.

January 13, 1892. Squint of two lines remaining, I operated upon the right internal rectus, again doing a full tenotomy. I observed the greatest care in regard to antisepsis. As is always my custom, I brought my own towels, napkins, porcelain dishes for instruments, and in fact, everything connected with the operation; the instruments had been boiled and were bright and polished. Ether anesthesia. I experienced the same troublesome hemorrhage which I had observed in operating upon the other eye, but beyond this, there was nothing unusual about the tenotomy. The patient complained of pain during the evening of the same day, and, according to directions I had left, iced compresses were applied for two hours.

January 14. Considerable swelling and redness of lids of operated eye. Marked tumefaction at the seat of the tenotomy. Prescribed a saturated solution of boric acid as an eye-wash, and continuation of cold compresses.

January 17. Lids swollen to such an extent that it was with difficulty that they could be separated sufficiently to obtain a view of the eyeball; they were reddened, edematous and skin covering them very tense. The eyeball was pushed forward and its motion limited. The discharge was serous with the addition of a very little pus which seemed to come from the seat of the operation. The patient complained of great pain; this was so severe that he was unable to sleep. Cornea clear and the deeper parts of the eyeball seemed normal as far as I could judge as the result of a very difficult examination. Temperature (mouth) 101.5, pulse 120. Examination showed that the conjunctival wound had not healed; I removed the two stitches; there was a slight sero-purulent discharge from this opening. The appearances all indicated the occurrence of *orbital cellulitis*, it was not merely a case of tenonitis. I ordered the cold compresses and boric acid solution to be discontinued, and substituted constant hot compresses and a wash of solution of corrosive sublimate 1 to 5,000; I also instilled atropin.

January 16. The symptoms became more marked. The lids were more tense and red and swollen; the exophthalmos more marked and the eyeball could scarcely be moved at all. There was now some purulent discharge from the conjunctival wound.

January 17. Condition the same. Dr. Knapp saw the case in consultation. Treatment the same. A thick pus was making its way through the wound; I enlarged the opening with a probe.

January 18. Condition the same, except that the discharge of

pus from the conjunctival wound is becoming more profuse, is thinner and escapes more readily. Pressure upon the upper lid increases this escape of pus. I concluded, therefore, that this opening would suffice for the discharge and did not incise the upper lid, especially since there was no portion which was more tender than the rest, and no indication of pointing.

January 19. Considerable improvement. There is a copious purulent discharge from the conjunctival wound. Less exophthalmos; the eyeball more movable; lids less tense. Temperature (mouth) 99.5, pulse 90. Continued same treatment.

January 20 to 24. All symptoms rapidly subsiding. Discontinued treatment.

February 2. Lids normal. Eyeball presents good motion in every direction except inward; here it is limited; still considerable purulent discharge from the conjunctival opening. Marked divergence of right eye. Examination with the ophthalmoscope shows optic neuritis of mild degree.

February 22. Discharge has ceased and conjunctival wound has healed.

April 16. Condition the same.

February 11, 1893. Divergent squint about half what it was. He had been wearing + 2.00 D., O. U. Ordered + 2.50 D., O. U. With these, vision is the same as before operation: O. D. $\frac{20}{50}$; O. S. $\frac{20}{40}$. Fairly marked optic nerve atrophy and some limitation of the field, O. D.

February 20, 1894. I had contemplated advancing the right internal rectus, but this was found unnecessary. There is now no trace of divergence; eyes are perfectly straight and motion is good in all directions. Vision, O. D. $\frac{20}{100}$; $\frac{20}{40}$ w. + 2. 50 sph. ⊃ + O. .75 cyl. 30° n.; O. S. $\frac{20}{40}$; $\frac{20}{20}$ w. + 2.50 sph. ⊃ + 0.75 cyl. 30° n. A small reddish mass about the size of a large pea has existed over the usual insertion of the right internal rectus; this was excised; it consisted of granulation and muscles tissue.

This case has happily recovered without any damage, and the boy is cured of his squint and requires no further treatment. And now the question, which is of interest, arises: How did infection occur? For there is no doubt that the wound was infected. I believe I can exclude instruments, dressings and everything else connected with the operation, for such an accident has not occurred to me in several hundred cases of tenotomy and in many cases of advancement for squint, nor have I encountered it after any other operations upon the eye. I believe too that I can safely

exclude my assistant as a factor, for I am always careful to see that the assistant exercises the same care in cleansing his hands that I make use of. The only explanation which I have to offer is, that probably the infection occurred in some way when the cold compresses were applied by the family on the evening of the operation, when the boy complained of pain.

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SO-CALLED MUSCULAR ASTHENOPIA.

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THE term muscular asthenopia is an exceedingly vague one from an etiological standpoint. It may mean what its name would seem to imply and it may not. All writers acknowledge that an unbalanced condition of the extrinsic ocular muscle may be the cause of asthenopia.

Many seem to feel satisfied that they have solved the problem when they have given directions for determining the muscular balance, and if found at fault, have laid down rules for prescribing the appropriate prisms for the correction of the same, or have explained the use of prisms for gymnastic exercise, either with or without some form of tenotomy. Advancement of the apparently weak muscles is also advised and its technique described.

There are a few who seem to have had a vision at some time in their lives, which allowed them to look into the hidden workings of that mysterious organ, the brain. There they saw, or thought they saw, in the faulty action of the nerve centers which preside over the eye muscles, the cause of the trouble in a small per cent of the cases. Only one author speaks of it as a frequent cause. At that point they also appear to have been satisfied and have suggested little for its relief.

For several years I have had a growing conviction that the real cause of muscular asthenopia was in the abnormal action of the nerve centers. Now I feel certain that it is central, in a very large proportion of those so suffering. When I make that assertion I am not unmindful of the writings and teachings of those gentlemen who would have us believe that nearly all our ills in this world, are directly traceable to the fact, that one or more of our extrinsic eye muscles is stronger than its opponent, or else has an abnormal insertion.

It seems to me that Landolt is the only writer who has given us a good definition of the cause of muscular asthenopia. He says, "that it depends upon the absolute or relative weakness of the adductors or upon their insertion, or else has its origin in the *central organ*, and depends upon a disturbance of innervation or upon a weakness of the power of fusion."

While I consider the above to cover the whole ground, I would certainly make some transposition, so as to make it read something like this: Muscular asthenopia usually has its origin in the central organ, depending upon a disturbance of innervation, or possibly, in some cases, upon a weakness of the power of fusion. In a small per cent of cases it depends either upon the absolute or relative weakness of the adductors or obliques, or upon their insertion.

My own observation teaches me that want of converging power is the chief cause of this form of asthenopia. I cannot agree with those who have found insufficiency of the external recti to be a much more frequent cause. I also feel that if they will assume that disturbance of innervation is at the bottom of most of these cases, and work them out from that standpoint, they will find that many of their cases which they have supposed to be dependent upon weakness of the externi, will fall very naturally under the reverse head.

My reasons for believing that the cause is usually central, and not peripheral are these: They have been set forth by others, so I can only repeat. Make a patient, who is suffering from exophoria, converge to his nearest possible point, by that means putting all possible strain on the supposed weak interni. Now while his eyes are fixed on the near object, with his head held rigid, command him to follow the object, as you move it to one side or the other. You will observe that his eyes follow easily, no matter, as a rule, to which side you carry it. In one case, or the other, you have, providing he follows the object, put a much greater strain on one or the other interni, and it finds no difficulty in responding. How could it possibly do that, were it an actual weakness of the muscle?

Again, many hyperopes, either with or without astigmatism, who have exophoria, find their exophoria disappearing soon after their error of refraction is corrected.

Or what is quite as common, an exophia which is causing marked asthenopia to-day, while the eyes are being used for continuous near work, may have entirely disappeared a few weeks later, especially if the eyes are relieved of near work.

Once more: When esophoria is associated with hyperopia or hyperopic astigmatism, of low degree, and the adduction is weak, the esophoria and asthenopia will frequently disappear without correcting the error of refraction, simply by increasing the adduction.

The test of carrying the weighted convergence-stimulus to infinity, is to me, another convincing argument.

All the above facts seem to me to point to a central origin.

In order to better understand what we mean by disturbance of innervation, let us look a little more at the action of the eye muscles. We have been taught from all time that convergence and accommodation go hand in hand. On those premises did Donders base his theory of the production of convergent squint in the hyperope. Fortunately for him, nearly all those afflicted with convergent squint chanced to be hyperopic. Not till he struck a myope, who converged, did he find any trouble with the theory.

That convergence bears a certain relation to accommodation, is understood by all, but that that relation is fixed and unchangeable, is not by any means a certain thing; in fact, I believe the reverse to be the truth. If it were not so we should always have esophoria with every case of hyperopia, whereas the opposite, or exophoria, is quite as common. Now, if exophoria ever develops in an hyperope, one of several things must take place, either the interni becomes exhausted, from the continual stimulus which has been applied to them, through the constant tax on the accommodation, or there is a true weakness, or abnormal insertion, of one or both muscles, or else the relation, which we have been taught existed between those two functions has been changed. If either of the former were true, a few minutes appropriate exercise could not possibly restore to the weakened interni the needed strength. Such a result can, however, almost always be brought about in a few moments, and is just what we would expect on the latter hypothesis. The moment you can separate these two functions it seems to me that we must acknowledge that they are presided over by separate nervous centers, which in some mysterious manner act conjointly, but still admit of having that action changed. If that is true, and I firmly believe it to be, all our cases of muscular asthenopia, dependent upon exophoria, should be amenable to treatment.

That, from my point of observation, would do away with more than half our cases of muscular asthenopia at once.

The development of esophoria in cases of hyperopia might be explained on the theory of the relation between convergence and accommodation. That, however, does not explain them all, as many do not improve after correction of the hyperopia, which they theoretically should do, were the hyperopia the cause. So again we are driven to the conclusion that that relation is not fixed and unchangeable.

Now for modes of cure or relief, whichever you choose to call

it. It goes without saying, that all forms of ametropia should have accurately adjusted glasses. As to what portion of the error of refraction should be corrected, it is not the province of this paper to discuss only in the most general manner.

Where esophoria is associated with hyperopia or hyperopic astigmatism, the whole error should be corrected and glasses worn constantly. Where esophoria is associated with myopia or myopic astigmatism, it is also my belief, that the whole error should be corrected. If the esophoria still gives troublesome asthenopia, then some appropriate exercise for the relief of the former should be instituted.

Where exophoria is associated with hyperopia or hyperopic astigmatism, the whole error may or may not be corrected and glasses worn constantly, or only for the near, as each case may seem to dictate.

Where exophoria is associated with myopia or myopic astigmatism, the whole error should be corrected and glasses worn constantly. The preceding are the four great classes with which we have practically to deal. If we are able to meet and successfully relieve all the above conditions, only a very few of our patients will suffer much in our hands, or be obliged to seek relief elsewhere.

The remaining cases of hyperphoria, and unbalanced obliques which cause asthenopia, I believe to be few in number when compared with all who suffer from muscular asthenopia, and quite a portion of these two classes can be met successfully by one or more means, which we always have at our disposal.

If I am right in the theory, that most of the cases of muscular asthenopia are dependent upon a faulty innervation of the eye muscles, than any means which would so change that faulty innervation as to restore the apparent want of muscular balance should give our patients relief. As I have said before, prisms combined with the glass correcting the ametropia have been prescribed for years, and when they are a success, the patients consider them a great one, though of course they are nothing more than crutches. We all know how wonderfully comfortable and satisfactory prisms are on certain patients, and how completely they fail on others who are, in some respects, in a like condition.

The above is of easy explanation when you admit the central theory for most cases, and the muscular weakness or abnormal insertion for the few. On no other grounds is it so satisfactorily explained.

Prisms for exercise, either with or without tenotomies, are in certain cases and by certain men considered a "*sinequa non*," and I am willing to acknowledge, give relief, either temporary or permanent, in many cases, especially in the hands of wise and careful men.

While, as I have said, one may have fair success with prisms, tenotomies and exercise, providing he is judicious, and his patient is careful, painstaking and faithful; nevertheless, as soon as he admits the central origin of the trouble, he must abandon the application of all of the above, except in a few cases, or where he uses prisms for exercise, with the distinct idea that he is changing the innervation, and not strengthening the muscles.

In June, 1889, Dr. Deady of New York, read a paper before the American Institute of Homopathy in which he described the carrying of the weighted convergence-stimulus from the punctum proximum to infinity, for the relief of exophoria. As far as my observation goes, the most of writers, even Deady, supposed they were strengthening one of the extrinsic muscles. Not one supposed he was changing the innervation of these same muscles. While Dr. Deady, now nearly five years ago, spoke of carrying the weighted convergence-stimulus to infinity, it was reserved for Dr. Gould of Philadelphia, to put it in such a shape as to attract the notice of the profession at large.

I presume Dr. Gould's investigations were "*de novo*," and he deserves full credit for all he has done for suffering humanity, still priority must be conceded to Dr. Deady; I am, of course, speaking within my knowledge simply, some gentleman may have suggested it years ago. I can only say I never heard of it, prior to the article above referred to. The details of carrying the weighted convergence-stimulus to infinity for the relief of exophoria and its reversal, for the relief of esophoria, have been so fully described that it would be a piece of presumption on my part to repeat them here. I only wish to say a very few words concerning the cases to which they are applicable.

We all know that the tests for muscular equilibrium are very unreliable. They vary from day to day, or from hour to hour of the same day. We also know that many patients suffer from apparent muscular asthenopia, whose muscles appear to be in balance by equilibrium tests. I think Landolt has given us the explanation of such cases. His experiments seem to prove that in order for one to work easily at the near point, he must use only one-fourth, or at most, one-third of his positive convergence. The other three-fourths or two-thirds being held in reserve.

Now one may have position convergence enough to satisfy the equilibrium tests, but which is realy so small in amount that it is practically all needed for near work, allowing none to be held in reverse. Such a person will, of course, show weak adduction, which should be brought up, no matter what the equilibrium tests may show. These cases are, I believe, very responsive to the convergence-stimulus exercise. Nearly all cases of exophoria respond equally as well to the same exercise.

In a word, I would say, that whenever the adduction is found weak, no matter what the state of abduction may be, the case is an appropriate one for the treatment referred to. If the adduction does not respond in a few weeks, you may have a true insufficiency and some surgical procedure may be instituted.

My observations as regards the application of the principles to esophoria have been limited, simply because I have not had enough cases to work on. The few which I have had have all responded well, but they are only four in number so they amount to nothing.

I have observed this: In many cases which show one or two degrees of esophoria, with weak abduction as well as adduction. That, as soon as you put them on the exercise for the weak adduction, the abduction commences to increase as well, so by the time the adduction has risen to 36° say, the abduction is up to about what may be considered normal, and all asthenopia has disappeared. Such cases I formally considered to be due to want of diverging power, but as they have all been getting well under exercise of adduction, I have been forced to change my opinion. The above probably accounted for the few cases of esophoria which I have encountered in the last six months.

I desire to present in a short and succinct manner the histories of a few cases which have fallen under my care of late. All errors of refraction corrected under a mydriatic.

Miss R., aged 16, had asthenopia for four years. Been under the care of many oculists. Error of refraction corrected: R. E. sph. + 0.50 ⊖ cyl. + 0.75 ax. 75°; L. E. sph. + 1. ⊖ cyl. + 0.50 ax. 90°. Abduction 5°; adduction 15°; exophoria 1° in acc. 8°.

Has had tenotomies, various kinds of exercise with prisms; no relief, not even temporary.

On November 29, 1893, commenced exercise with innervation prisms. In three weeks abduction 7°; adduction 32°. All asthenopia gone. Remained comfortable up to May 10th.

The patient had an apparent want of balance of the oblique which disappeared as soon as the adduction came up.

Miss S., aged 16, for five years has had asthenopia. Worn glasses con-

stantly all that time. R. E. sph. + 0.50 ⊖ cyl. — 1.25 ax. 180°; L. E. sph. + 0.50 ⊖ cyl. — 2. ax. 180°. Abduction 7°; adduction 15°; equilibrium; exophoria in acc. 12°; no change in glasses.

On March 9, 1894, commenced exercise with innervation prisms. In two weeks abduction 8°; adduction 40°; asthenopia gone. Only time will tell the final result.

Mrs. C., aged 40, had asthenopia for years. Tenotomy of left int. rectus five years ago. Since then has worn: R. E. sph. + 0.50 ⊖ cyl. + 0.50 ax. 165°, ⊖ prism 2°, base out; L. E. sph. + 0.25 ⊖ cyl. + 0.75 ax. 15°.

February 1, 1894, first consulted me. Abduction 3°; adduction 20°; esophoria 10°; in acc. 2°.

Allowed to retain the same lenses minus the prism. Innervation exercise commended.

On May 23d, esophoria 4°; abduction 6°; adduction 26°; no asthenopia,

Mrs. K., aged 25, almost an invalid for years. Always has headache, scarcely able to use the eyes for any near work. Abduction 4°; adduction 12°; esophoria 1°; exophoria in acc. 10°. Given for constant wear: R. E. cyl. + 0.50 ax. 135°; L. E. cyl. + 0.25 ax. 45°.

March 13, 1894, commenced exercise of the interni. In four weeks abduction 6°; adduction 38°.

All headache and asthenopia gone. Digestion improved; gaining flesh she thinks, though has not tested by weight. Expresses herself as being an entirely different person.

Mrs. P., aged 35, for nine years had asthenopia and headache. Always had dysmenorrhea; for twelve years menorrhagia and metrorrhagia as well. Seven years ago, was for six months in a private hospital for their treatment. No benefit. Always in bed from two to four days at menstrual period. Room dark, not able to use the eyes for anything.

Various lenses, either with or without prisms, have been worn for the last eighteen months. Benefit only temporary.

First seen February 14, 1894, just able to walk two blocks to my office. Equilibrium; exophoria in acc. 5°; abduction 6°; adduction 16°; right hypophoria 5°.

Innervation prisms for increase of adduction, used three times a day on the 14th and 15th. Made her very ill first day, vomited quite a portion of night, but felt better on the 15th. Menstruation commenced during the night of the 15th and 16th, unattended by any pain, which she affirms is the first painless menstruation she has ever had. No photophobia. Up and about all the time. No menorrhagia or metrorrhagia, menstruation lasted five days in place of nine as has been usual for twelve years.

Innervation exercise continued daily. In six weeks abduction 6°; adduction 38°: right hypophoria 2°.

Given R. E. cyl. + 0.50 ax. 90°; L. E. cyl. + 0.75 ax. 90°; prism 1°, base up, as it was left superior rectus which was at fault, to be worn constantly. Second, third and fourth menstrual periods have been normal in every respect.

Little asthenopia or headache, unless she uses eyes excessively hard. I present this for what it may be worth, time will tell.

Miss B., aged 10, in April, 1893, adjusted these lenses. R. E. sph. — 5 ⊖ cyl. — 2 ax. 10°; L. E. cyl. — .75 ax. 10°; abduction 6°; adduction 10°;

exophoria 3° in acc. 10°. Glasses gave some comfort for nearly a year, when they became almost useless, as headache and asthenopia seemed to be increased by them.

On April 19, 1894, consulted me again. Abduction 6°; adduction 10°. Under innervation prisms, in three days abduction rose to 12°; adduction to 32°, and glasses were worn more comfortable than ever. I understand this may not last.

Miss O., aged 20, had asthenopia and headache for several years. Been a patient of several good men. Since December, 1891, I have had charge of her. Been wearing R. E. sph. + 0.50 ⊃ cyl. + 0.75 ax. 90°; L. E. sph. + 0.50 ⊃ cyl. + 0.50 ax. 90° for distance, Esophoria 1°; exophoria in acc. 10°; abduction 4°; adduction 15°.

Tenotomies have been done, which gave temporary relief only. All kind of exercise with prisms. Various combinations of prisms with above correcting lenses have been prescribed. With none could she read or work more than a few minutes at a time.

On November 2, 1893, commenced exercising with innervation prisms.

In four weeks the muscular balance was as follows, and has remained so till to-day, May 24, 1894: Esophoria 4°; equilibrium in acc.; abduction 4°; adduction 36°.

All asthenopia and headache gone, uses eyes for anything and everything she chooses with absolutely no discomfort.

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A CASE OF INJURY TO EYE.

By C. P. Pinckard, M. D.,
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DAVID F., a printer, while "fooling" with a friend April 3, 1894, was struck in O. S. by the point of an umbrella. He had on his spectacles at the time and the blow broke the left lens. The thrust was not from directly in front, but somewhat from the left. The cornea was abraded below the center, the conjunctiva torn from the globe, the tear beginning at the limbus and extending in a pyramidal shape completely to the inner canthus. As far as could be determined the point of the umbrella penetrated the orbit about three-quarters of an inch beyond the caruncle. With a pair of forceps with spoon-shaped tips, I removed ten pieces of glass from the wound, some of them being one-half an inch deep. The largest of the pieces measured 4x3x2 mm., five being the size of small grains of sand. The wound was flushed with 1-3000 corrosive sublimate solution; the conjunctiva stitched back in place, atropin solution instilled, iodoform applied, and the eye bandaged. A slight cut of the upper lid was also dressed.

April 4th. Conjunctival wound healing nicely. Fundus examined. Subretinal serous effusion slight at inner lower side in front of equator.

April 5th. Considerable pain last night, some circumcorneal injection, retinal separation less.

April 6th. No pain last night, retinal separation has disappeared. V., O. S., $\frac{20}{100}$, sph. -4.50 ⊃ cyl. -0.50 axis 150° = $\frac{20}{30}$. V., O. D., $\frac{20}{100}$, sph. $-6 = \frac{20}{20}$.

April 7th. Stitches removed from conjunctiva. No pain. Improvement continued and patient was discharged well April 21, 1894. V., O. S. = $\frac{20}{20}$. with glasses. Movements of O. S. normal in all directions.

The case seems unusual because so little damage was done to the eye by a thrust striking the cornea, and not dislocating the lens or rupturing the iris, especially as the eye was so myopic. I expected to find the internal rectus cut or torn from its attachment, but it was not injured. The patient has been doing his regular work since May 1st with perfect comfort.

65 Randolph Street.

SOME CASES IN OPHTHALMIC PRACTICE.

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FORMERLY ASSISTANT TO THE CHAIR OF EYE, EAR, NOSE AND THROAT DISEASES IN THE KENTUCKY SCHOOL OF MEDICINE.

Leucoma of the Cornea. Paralysis of the Accommodation from Diphtheria. A Case of Subconjunctival Hemorrhage. Paralysis of the External Rectus.

AT the last year's meeting of the Colorado State Medical Society I was much interested in a case of leucoma of the cornea, exhibited by Dr. Chase, which he had treated by electricity. It therefore occurred to me that a paper reporting some of the cases that have been of especial interest to me in the past year might be of interest to others.

Leucoma of the Cornea. In connection with the case of Dr. Chase refered to above, I would like to say that I have had one case presenting a most excellent opportunity to test the efficacy of his treatment, with results surpassing my most sanguine hopes.

James F., aged 25, laborer, was first seen by me in August, 1893. There was granular conjunctivitis of both eyes, accompanied by a central ulceration of each cornea; these ulcers were surrounded by a dense leucoma. Vision was reduced to a perception of light in both eyes; patient had to be led to the office. By vigorous treatment I succeeded in healing the granulations and ulcers by October 15, leaving a dense opacity over each cornea. The right presented only the lower and inner one-fourth free from opacity; the left, the lower third. I then began the ordinary treatment with very poor results. The eyes remained free from pain, but vision was limited to a mere perception of light. On December 5th, I began the application of the electric current as recommended by Dr. Chase, with the result that by January 1st, my patient was able to come to my office unattended. The daily application of electricity was continued until April 1st, when he was so much improved that he accepted a position and went to work. Patient was seen by me May 20th, and on inquiry as to his vision, said: "I see so well that I have made a seine for some persons who want to fish that way."

Paralysis of the Accommodation from Diphtheria. The following case is given, not on account of the rarity of diphtheritic paralysis of the accommodation, for this is the most common form, but it shows how slight a case may be followed by paralysis.

Jennie S., aged 15, school girl, was brought to my office by her mother, complaining of loss of vision. She had been wearing glasses for compound hyperopic astigmatism, with which she was able to see at a distance, but was unable to read. The pupils were normal; reaction to light good; vision $\frac{20}{20}$ with glasses. She was able to read with strong convex lenses, but could not see at a distance with them. She had regurgitation of fluids through the nose upon attempting to swallow. Careful inquiry elicited the fact that she had suffered with a severe sore throat six weeks previous to her visit to my office, and although the family physician had not pronounced it diphtheria, he had taken this precaution to isolate her from the other children. I decided that it was an undoubted case of diphtheritic paralysis and ordered a tonic of iron and quinine with strychnia (1-30) three times daily. Patient made a rapid recovery.

A Case of Subconjunctival Hemorrhage. Subconjunctival hemorrhage is a condition so frequently met with by the ophthalmologist, that my excuse for presenting the following case is the peculiar cause. The etiology is variously given by authors as injury, cerebral congestion, violent straining as in paroxyisms of coughing, epilepsy, etc. In fracture of the orbit, extravasation may extend beneath the conjunctiva; it is sometimes seen in girls at the menstrual period; my experience has been that it is most frequently idiopathic, especially in elderly persons.

Paul R., school boy, aged 11, was brought to my office by his mother on November 27, 1893. He gave the following history: "On the 23d while in attendance at one of the public schools, on refusing to take his physical culture lesson, he was seized by his teacher, thrown to the floor and choked almost to insensibility, presumably as an example to other refractory pupils. As a result he had a severe subconjunctival hemorrhage, involving the entire inner and lower half of each ocular conjunctiva.

Paralysis of the External Rectus—Traumatic.

Frank M., aged 10, was referred to me by Dr. Duggins, with marked strabismus of the left eye, diplopia, and nausea. The father desired me to operate and straighten the eye. I found on inquiry that the squint had existed only since the boy had been thrown from a horse, two weeks previous to that time. He was thrown on his left side and picked up unconscious. He complained of diplopia and nausea when walking, which was so uncomfortable that he kept the eye covered. Vision L. E. $\frac{20}{20}$. There had been no ecchymosis of the lids, the right eye followed an object moved to the left causing the strabismus to become more marked. Mobility upward and downward was normal; projection to the left. There was homonymous diplopia on holding the test object on a horizontal plane, increased on holding it to the left, diminished on moving it to the right and finally disappearing. This was undoubtedly a paralysis of the left abducens (sixth) nerve.

I ordered potassium iodid, after meals. Patient returned one week later, squint much improved. Three weeks later almost gone. I have not seen him lately as he lives some distance in the country.

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THE TOXIC AMBLYOPIAS; THEIR SYMPTOMS, VARIETIES, PATHOLOGY AND TREATMENT.

By Casey A. Wood, C. M., M. D.,
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[*Continued from Vol. III, page 88.*]

Cannabis Indica. Arsenic. Lead Salts. Salicylic Acid and Sodic Salicylate. Cocain. Venom of Poisonous Reptiles. Salts of Silver. Mercurial Preparations. Ergot. Nitrite of Amyl. Nitrous Oxide Gas. Male Fern. Pomegranate. Ptomaines. Poisonous Fungi. Symptoms, Diagnosis and Prognosis.

CANNABIS INDICA. Although, according to Ali (16), chronic indulgence in "haschisch" produces an amblyopia of the nicotine-alcohol type, the eye symptoms accompanying acute poisoning are by no means constant or characteristic. James Oliver (116) noticed dimness of vision and weakness of accommodation, the pupil being contracted, or of normal size. On the other hand Casiccia's (117) case developed mydriasias accompanied by hallucinations of vision, "lights and sparks of fire before the eyes." Susskind (118) also reports dilated pupils, while in Seifert's (119) case the pupils were of medium size and reacted slightly to light. Finally, Werner (120) reports an instance of cloudy *violet vision* in a small nervous woman, developed by $\frac{2}{3}$ grm. of the extract taken in nine divided doses. We may accept all this as evidencing the truth that the symptoms of chronic and acute poisoning produced by drugs are often widely different.

Arsenic. The lids, conjunctiva, cornea and sclera of patients are often affected and the majority of the cases reported by ophthalmologists are merely descriptions of the hyperemia, odema and pigmentation of the external ocular apparatus that in chronic arsenical poisoning or during long continued medication also affect the skin and mucous membranes elsewhere.

The claim of arsenic to a place in Class I, Div. 1, of our classification is, however, supported by the evidence of more than one witness. Liebrecht (50) reports the following case from Schöler's klinik in Berlin:

A man, aged 30, examined on account of misty vision of four weeks standing. V., L. = $\frac{20}{200}$ Sn. vii; V., R. = fingers at eight feet and Sn. xvi. Pupillary reaction normal. Ophthalmoscope shows temporal pallor of disk. F. of V. normal at periphery, but they show an ill defined paracental scotoma for green and red. On the right side (near the fixation point), a very small absolute scotoma. Patient drinks no spirits and only a small amount of beer. Formerly smoked four or five cigars daily—for four weeks none. Doubtful luetic history.

During the previous three years and a half the patient had taken arsenic in pill form (dose unknown) for *psoriasis fere universalis*, the amount having been greatly increased during the past six weeks until within eight days when he was obliged to intermit it owing to the production of vomiting with pains in head and stomach. The outcome of this case is not recorded but the absolute scotoma, in the absence of other causes, would lead us to agree with the reporter in his assertion that the optic nerve lesion present was the result of the chronic arsenical poisoning and was not due to tobacco.

That cases of simple optic nerve neuritis occur is abundantly proven. Dana (121) in giving a full account of arsenical paralysis records such an instance in an American, aged 48, who was ordered Fowler's solution in increasing doses until at last he took ozss, *t. i. d.* After a month of treatment he had peripheral motor and sensory paresis as well as optic neuritis, with normal pupillary reflexes. The medicine was discontinued and in five months the patient was better.

In a second case the vision was impaired without optic inflammation.

H. Derby's (122) case is of great interest as the trouble was ultimately traced to the arsenical wall paper in the patient's library. The latter, a man of regular habits and previous good vision became so blind that V. R. = $\frac{1}{20}$; V. L. = $\frac{2}{10}$; bilateral optic neuritis with slight hemorrhage near r. o. d. *The urine was found to contain arsenic.* After removal of the probable cause patient gradually improved. Krehl (123) records a case of medicinal poisoning (Fowler's solution); a man, aged 23, who, formerly healthy, acquired a horizontal nystagmus of slight degree, with flashes before his eyes on gazing steadily at objects.

Lead Salts. The symptoms of this form of amblyopia are by no means constant because plumbism does not always affect the same parts of the eye. Among the earliest and most interesting contributions to this subject is the account given by Mr. Hutchinson (124) of five cases.

The commonest symptoms are those due to *optic nerve atrophy* which may come on slowly or be chronic from the beginning. The picture is usually that of a pale, well-defined disc with the arteries greatly reduced in caliber, even when the veins are distended. Sometimes there is slight congestion of the papilla, but this is accompanied by little swelling and the disc eventually becomes of a dirty gray tint with lines running along the narrowed vessels. Sight is always greatly affected, and the visual field may present both central and peripheral defects. This commonly goes on to total blindness. In five cases published by Landesberg (125), two had optic nerve atrophy and treatment was of no avail. Vision was reduced to $\frac{20}{100}$ and less in both eyes.

In a case described by Uhthoff: a color-mixer, aged 18, seen nine months after symptoms set in, not complicated by tobacco, alcohol, or renal affection, there appeared to be an extensive *retro-bulbar neuritis*. The vision in the right eye was only $\frac{7}{200}$ and in the left eye $\frac{8}{200}$. The F. of V. showed an absolute central scotoma with uncontracted periphery. There was a distinct pallor of the outer half of the disc. Very little improvement took place. DeWecker and Masselon (126) speak of true retro-bulbar neuritis as common in cases of lead poisoning, but say that if the poisoning persists the relative scotomata becomes absolute and increase in size.

In another and important class of cases the local manifestations are those of a decided *optic neuritis* with retinal and papillary hemorrhages, swelling of the disc, tortuous and obscured vessels. Gowers (127) figures such fundus in the case of a man, aged 45, who had marked cerebral symptoms such as headache, delirum, convulsions, etc. The disc is concealed by a swelling of moderate prominence bordered by a fringe of striated hemorrhage and of a color nearly that of the fundus. The veins a little larger than normal. Arteries concealed by the swelling and most of them very narrow. Vision was considerably impaired but could not be accurately tested, owing to his mental state.

Last, but by no means least, there may exist a state of *transient visual disturbance* without fundus changes, which is probably the most frequent of all. The amblyopia may last but a few hours, and many patients who finally exhibit signs of optic atrophy or neuritis give a history of antecedent "attacks" of dim vision. Gowers thinks this is analogous to the temporary amaurosis of diabetes, and is due to the direct effect of the lead upon the visual centers.

Stricker (128) records a well-marked example of temporary amblyopia in which, however, the attacks lasted much longer than they usually do. The patient, a woman, had intermittent epilepti form attacks due to lead poisoning. These were accompanied by a slight bilateral optic neuritis, giving rise to a sensation of fog before the eyes. For varying periods the vision sank so low that she could not see her hand. In the intervals of rest from the fits the cloudiness cleared up and the patient had normal acuity of vision. At one time the foggy sight lasted nine weeks, but eventually the attacks of saturnine epilepsy became less frequent and less severe, and with this improvement the optic disc again resumed its normal aspect. In the same way Günsburg (129) relates a case of temporary blindness (in which the lead poisoning had produced renal disease) associated with uremic symptoms. The loss of sight lasted several hours. The fundi were normal, but the pupils did not react to light. Next day V. was normal and the uremic symptoms had disappeared. Michel has observed in several cases of lead colic that the visual acuity temporarily diminished to mere perception of light although there were no fundus changes discernible. This state of things he considers a purely reflex amblyopia, and does not think it is due directly to the lead poisoning.

In chronic lead poisoning the general symptoms (characteristic dark line along the gums, colic, muscular paresis, arthralgiæ, etc.) usually persist for a long time before vision is affected. Samelsohn (130) has pointed out, as a rare exception to this rule, the appearance of ocular affections before other signs of plumbism show themselves, and states that in such cases the former rapidly disappear when the poisonous influence is removed. In any event the eye is involved (seriously at least), in a very small percentage of cases of plumbism.

In Günsburg's (129) case the patient was unaffected until after he had been employed continuously for 27 years in the lead works. If the injurious habit or occupation of the patient is persisted in, organic lesions commonly show themselves with a permanent reduction of vision.

Although the above forms include the great majority of cases of lead amblyopia, many other ocular manifestations are on record, especially *paralysis of one or more of the extrinsic ocular muscles.* One of Landesberg's (125) cases had a bilateral paresis of the rectus externus; another had complete paralysis of all branches of the oculo-motorius. Von Schroeder (131) also reports a case of

typical neuro-retinitis with bilateral abducens paralysis. Landolt (132) describes a most interesting case of left-sided hemianesthesia with gray-red discs and irregular scotomata in both fields.

Wadsworth (133) gives a very instructive account of a boy aged 9, with marked optic neuritis and paralysis of several ocular muscles; lead was found in the urine for many months and vision was entirely lost from optic atrophy. The source of the lead was not ascertained.

The state of the pupils, to which importance is attached by some in the diagnosis of the ocular disturbance of plumbism, is not of much importance. They are often dilated during attacks of colic, but may, according to T. Oliver (19), be unequally affected. Their condition at other times will depend upon the amount and kind of the fundus changes.

The *diagnosis* of lead amblyopia rests upon the presence of the accompanying plumbism, although when nephritic or cerebral disease is present it may indeed be difficult to say whether the ocular disease be due to the direct or the indirect influence of the lead poisoning. There is no reason why the presence of lead salts in the body should not be demonstrated, and in all doubtful cases the urine should always be examined from time to time. C. A. Oliver (134) relates a case of progressive blindness in a male adult where the urine, saliva and nasal mucus revealed the presence of lead.

The *prognosis* is favorable when vision is not reduced and the fundus changes are slight or are recent, but very unfavorable in chronic atrophy, in the retinitis accompanying nephritis and in the neuritis following or accompanying cerebral disease.

Salicylic Acid and the Salicylates. There is not much to add to Gatti's (24) case. Knapp (135) says that the visual disturbance observed in three cases of poisoning by this drug *were about the same as in the milder attacks of quinine amaurosis.* They all got well quickly and left behind them no noticeable traces. As suggested, in speaking of the eye signs of quinine poisoning, it is very likely that a slight and temporary decrease of the visual acuity is not uncommon in persons taking large doses of the salicylates and that this symptom is likely to be overlooked or attributed to other causes. I have made diligent inquiry among a number of my confreres in general practice and have reason to believe that several such cases have been observed in Chicago.

Gibson and Telkin (136) relate a case of a middle-aged woman, where after two drams had been given (divided into 30-grain doses every two hours), the patient showed extreme contraction of the

pupils which were insensitive to light. Thirty hours afterwards there was complete recovery. In Schiffer's (137) case there were hallucinations of vision for twenty-four hours after an enema of seventy-five grains sodic salicylate.

Cocaine. There are no distinctive ocular symptoms resulting from either acute or chronic poisoning from cocaine. In a fatal case seen by me (resulting from the spraying of the naso-pharynx with a small quantity of a 20 per cent solution), that occurred while I was clinical assistant at the London Throat Hospital the pupils were fully dilated, but other observers have noticed contracted or even normal pupils during acute poisoning. Bettelheim (138) found a sensitive cornea in a similar case. Marckwort (139) reports a case where its long continued application to the nose probably produced an acute glaucoma; Chisholm, Javal and others believe that its application to the conjunctival sac may induce glaucomatous outbreaks. Hallucinations of vision, chromatopsia, diplopia, micropsia with dancing of objects before the eyes have all, as temporary symptoms of chronic cocaine poisoning and in persons addicted to the cocaine habit, been noticed by several observers, especially by Saury (140). In Bock's (25) case, ten minutes after the usual symptoms of poisoning set in, the patient complained of misty vision and became unconscious. Ophthalmoscopic examination showed, during and after the attack, no pallor of the nerve but diminution in size of the retinal arterioles. Vision the same as before the poisoning.

Venom of Poisonous Reptiles. In my introduction of the subject I have already sufficiently spoken of the symptoms and course of the eye troubles in these forms of intoxication.

Silver Salts, Mercury and its Salts. I have nothing to add to the introductory notes.

Ergot. Knies, as well as Albutt, speaks of the contractile effects of ergot upon the retinal and nutrient opticus blood vessels, and as a result, marked pallor of the disc. A transitory amblyopia is produced by this vascular contraction and papillary anemia. The pupil is usually dilated and inactive. All these symptoms were well shown in a case of ergotism recorded by Hume (141) where an enema of an ounce of the fluid extract had been administered. Menche (142) observed these same symptoms during an epidemic of ergotism in Ober Hesse twenty-five years ago, but he is probably wrong in claiming a case of *iritis* as due to the effects of the poison.

But by far the most important ocular result of ergotism is the

production of *cataract*. The earliest account is given by Ignaz Meier (143) of twenty-three cases, victims of the epidemic of 1857, in the Siebenbürger district of South Germany. The wet summer produced disease of the rye and in spite of warnings to avoid the tainted bread the ignorant and half-starved peasantry ate it in large numbers; 283 were affected by ergotism of whom ninety-eight died. In the following year Meier saw fifteen women and eight men affected with slowly progressive (several months to a year in forming) cataract of the senile type. Both lenses were affected and the ocular disease seemed to confine itself to the crystalline; the retina, vitreous and opticus were healthy, and the extraction of the cataract was uniformly successful. Kortnew (144), during the widespread 1889-90 epidemic in the Russian Njatka government (caused by diseased rye meal, which affected 2,000 persons), had an excellent opportunity of studying the eye symptoms of this formidable disease. These set in about two months after the beginning of the epidemic and are divided by him into two groups; the first complained of intermittent failure of vision coming on in some instances several times a day, sometimes only once a week, and in others at longer intervals. The average number of attacks during the whole illness was from three to five. None of these patients complained of total or permanent loss of vision.

With the second class of cases it was quite different. The loss of vision not only persisted but got gradually worse as the convulsive seizures, due to the poison, continued. In every such instance opacities were found in the crystalline, which presented the smoky gray appearance of senile cataract. In all the instances of this kind, thirty-seven, the opacity spread from the center towards the periphery, and in from three months to a year became complete. Little children were blind in from two to three months; adults over forty took longer, from eight to twelve months. The extraction of such cataracts was ordinarily successful except that there was an unusual loss of vitreous.

Tepljaschin (145) examined twenty-seven cases of this form of cataract in Russians affected by the disease and found the same conditions reported by Kortnew.

Nitrous Oxide Gas. Observations of Aldridge (146) confirm what one would naturally expect to discover with the ophthalmoscope—dilatation of the retinal arteries and hyperemia of the papilla. This condition is essentially a transitory one and disappears with the elimination from the blood of the toxic agent that gave rise to it.

AMYL NITRITE acts on the optic and retinal vessels in much the same way as laughing gas. Chromatopsia of the parti-colored (mixtures of yellow, violet, black, white and red) variety, as well as hallucinations of vision have often been observed, but, so far as I know, no permanent changes in the ocular apparatus have resulted from its employment in medicine or in poisoning by it.

MALE FERN. There are several well authenticated instances of *amaurosis* and amblyopia from acute poisoning by this drug. In a fatal case reported by Eich (147) the symptoms were those of strychnia poisoning with contracted pupils. In some severe cases of poisoning when the patients survived, blindness, the result of optic nerve atrophy has been several times recorded. Schlier (148) reports a case of temporary amaurosis complicated with albuminuria, but the history of several other cases reads like quinine amaurosis. Zimmermann (149) records an instance of bilateral opticus atrophy from a dose of ten grams of the extract, and Fritz (150) of a unilateral atrophy following the acute blindness. Fritz's case is worth recording in full:

A well nourished girl, servant, aged 18, suffering from taenia, bought at a drug store ten capsules of extr. fil. maris, each containing one gram, and took a capsule every hour. As soon as she had taken six she was attacked by convulsions and coma, and when she recovered from these was blind in both eyes and her pupils were widely dilated. In the course of a week the sight in the right eye began to improve, but very slowly, until after several months the visual acuity again became normal. The left eye remained amaurotic and in it atrophy of the optic nerve was plainly made out. The papilla became very white and the eye was finally affected by strabismus.

POMEGRANATE. Jacobson (128) records an instance of poisoning by the extract where the effects resembled those of the cycloplegic intoxicants—paresis of accommodation and dullness of distant vision from the development of latent hypermetropia. According to Dujardin-Beaumetz hypodermic injections of sulphate of pelletierine and isopelletierine (alkaloids from the root-bark) produced marked dilatation of the retinal vessels, contracted pupils and scleral injection.

EXTRACT OF POMEGRANATE AND MALE FERN. Bayer (151) describes a case in which after a dose of 17.5 grms. of extract granati, mixed with the same quantity of male fern extract (divided into seven hourly doses of 2.5 grms. each), vomiting, faintness and unconsciousness lasting thirty hours were observed. The patient became blind in the left eye and visual acuity was dull in the right. The blindness was, in the light of other cases, probably due to the poisonous action of the male fern.

PTOMAINE POISONING. Botulismus. Allantiasis. In a properly constructed review of the amblyopias resulting from this form of intoxication and following the rule laid down by me in the beginning of these studies, each ptomaine should be considered under separate headings, but as neither these putrefactive alkaloids, nor the poisonous leucomaines have all been isolated, and as it is very probable that the ocular symptoms in many instances arise from the combined action of two or more poisons, no such satisfactory arrangement of them can be had.

In the same way the leucomaines have been treated of under such headings as *venom of snakes*, *toad poison*, *poisonous fungi*, etc.

There is a close family resemblance to certain alkaloids, notably *atropia*, *eserin*, curare and strychnia, in the action of ptomaines upon the eye and general system. As an example of this, *muscarin and neurin* produce miosis and spasm of accommodation; *tyrotoxin* paresis of accommodation and mydriasis.

In most of the recorded instances of toxalbumin poisoning, where life was saved, the visual acuity shortly returned; there were no fundus changes and no injury to optic nerve or retina.

Paresis or *paralysis of accommodation* (bilateral and usually accompanied by widely dilated pupils) is the most common eye symptom of poisoning by decomposed *meat*.

Partial and transitory visual failure has frequently been noticed and is likely to be, and probably often has been overlooked or misinterpreted. M. Knies (152) relates a case where two persons who ate of the same fish (which was apparently above suspicion), had as a result a paresis of accommodation that lasted twenty-four hours.

All the extrinsic ocular muscles have been affected, from bilateral and nearly complete ophthalmoplegia externa to paresis of a single muscle. Of these *ptosis* is the commonest of the oculo-motor pareses and has been noticed by many observers *e. g.*, by Kaatzer (153), Hirschfeld (32), Flury (154), Federschmidt (31) and Pürkhauser (155).

These symptoms do not, as a rule, show themselves for several days after the poisoning. Boehm (155) cites a case where the paralysis was first noticed nine days after the ingestion of the food.

Groenouw (30) gives the following account of a few cases:

W. G., aged 29, the next day after eating a full meal of raw ham found that his throat was dry, that he could hardly swallow his food (especially dry bread), and that he was unable to read ordinary print. He was slightly

myopic, and it was estimated that he had lost through the cycloplegia present 5 D. left, and 6 D. right, of accommodative power. Under treatment the symptoms slowly disappeared.

Two other cases occurred in the same family and presented about the same symptoms. The ocular signs declared themselves in from two to five days and lasted for nine weeks. The remains of the ham were fed to mice whom it killed in twenty-four hours. Parts of the dead mice were fed to other mice who remained perfectly healthy, from which it was concluded that the poison was a ptomaine or ptomaines and that death did not result from bacteria, none of which could be detected in the ham or dead mice.

Eichenberg (157) noticed in a case of sausage poisoning, which ended fatally, not only a third nerve paralysis, but a unilateral abducens paresis. Federschmidt (31) saw twenty-two cases of "Wurstgift," the ocular symptoms being in addition to accommodative failure, dilated pupils, cloudy vision, diplopia (three cases), and in one instance paresis of the *lev. palp. sup.*

The differential *diagnosis* of these cases may not always be easy, especially from diphtheria and poisoning by the mydriatic alkaloids. The presence or absence of *paralysis* of the extrinsic ocular muscles, the course of the accommodative paresis, as well as the nature of the general symptoms must, of course, be considered. Quite recently an American practitioner wrote a short article for a well-known medical journal in which he described several cases of atropine poisoning from eating *turkey*. He explained the symptoms by assuming that the bird, in question had, just before his death, fed on belladonna berries or some other plant possessing cycloplegic properties, and that when served at the table his flesh, being impregnated with the poison, had acted like an overdose of belladonna extract. This error was quite pardonable and doubtless many physicians, unaware of the cycloplegic action of tyrotoxin (tyrotoxicon) and other ptomaines, have made similar mistakes.

The *prognosis* is generally good and recovery is usually rapid. When death does not occur and the muscular paralyses persist it is likely that central changes (basilar neuritis or meningitis or nuclear hemorrhages) have been produced by the intoxication. Some of these last cases present symptoms closely resembling typhoid fever (even to changes in Peyer's patches, intestinal ulcerations, etc.), and may easily be mistaken for it.

Fungus Poisoning. Manifestations of this form of intoxication naturally depend upon the kind of fungus, since the active agents in the various mushrooms, toadstools, etc., vary greatly. Some of them when eaten in poisonous doses produce accommodative

spasm and contraction of the pupil, only, as Knies points out, these symptoms occur in order the reverse of those brought about by eserine, the spasm coming on first. Such a fungus is the *agaricus muscarius* whose active principle—*muscarin*—closely resembles the ptomaine named *neurin*. The *agaricus phalloides* on the other hand, does not affect the pupil, although, as Handford (158) has shown, disturbances of vision result from poisoning by it. In Maurer's (159) case the pupils were dilated *ad maximum*.

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[*To be Continued.*]

PERSISTENT MOBILITY OF THE STAPES IN SOME CASES OF CHRONIC CATARRHAL DEAFNESS.

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In six cases of chronic catarrhal deafness, tinnitus aurium and tympanic vertigo, in which I have performed tympanotomy, and removed the incus, I have found at the time of the operation, that the mobility of the stapes was *perfect;* in other words, this bonelet was not ankylosed in the oval window.

In these cases the relief from tinnitus and vertigo, following the operation, has been prompt and marked while the improvement in hearing has been little or wanting entirely. In illustration let me present the account of the following case:

Mr. W. P., aged 34, a clerk, consulted me January 29, 1894, at the suggestion of Dr. W. H. Bunn of this city. The patient's left membrana tympani presented the ordinary symptoms of chronic catarrh of the middle ear, viz.: opacity and retraction. The hearing on this side was ten inches for isolated words, and two inches for the large clinical tuning-fork by aerial conduction. No tinnitus in the *left* ear. The pharynx was in good condition; the nares, however, showed signs of acute rhinitis. The patient said he thought the hardness of hearing in the left ear had grown worse lately.

Treatment of the nares and naso-pharynx by mild antiseptic sprays relieved the rhinitis and improved the hearing to some extent in the left ear. On the *right* side, however, an altogether different condition was discovered. Here the membrana was perforated below the manubrium, and through the heart-shaped opening the mucous membrane beyond gave evidence of having been the seat of chronic purulency. The membrana was thick and rigid and seemingly attached to the incus, or its remnant, and lying against and pushing inward the stapes, which bone, however, was *not visible.* The deafness in this ear was profound. For two months previous the tinnitus had been increasing in the right ear and the patient had experienced an unaccountable tendency to vertigo, which he supposed to be due to stomachic derangement.

The exacerbations of vertigo became more frequent and more intense until the patient was afraid to walk in the street alone, and at last, in February, he ceased to go to his business on account of the tinnitus and tympanic vertigo.

It now became manifest that these disagreeable symptoms in the *right* ear were due to impaction of the stapes in the oval window. It was therefore proposed to liberate the stapes by cutting into the thickened, upper posterior quadrant of the membrana tympani, and then removing the incus. The patient was etherized March 2, 1894, and a wide incision made in the thick membrana. A piece of the long shaft of the incus (the only vestige of this bonelet) was found imbedded in the thickened membrana and removed. This exposed and liberated the stapes, which was found to be *very movable*. Owing to the upward shrinking of the membrana into the attic, a condition I have observed in other cases of loss of the incus, from chronic suppuration, the stapes appeared relatively very low, nearly on a line with the lower end of the manubrium. The stapes is still plainly visible and readily movable in this case.

After the operation the vertigious tendency rapidly diminished. In a week the patient was able to walk in the street alone and he returned to his business. The tinnitus grew less but not as rapidly as the vertigo. *The hearing was not improved.*

It becomes manifest therefore that a mobile stapes does not insure good hearing. The cause of deafness in such cases must be due to an alteration in the proximal nerve structures of the labyrinth, *i. e.*, those nearest the diseased mucous membrane of the drum-cavity. They indeed may be instances of nervous deafness, the result of structural changes in the labyrinth tissues, induced by an extension of the catarrhal lesion of the mucous membrane of the tympanum, sclerotic in nature, through the intimate vascular connection of the latter with the vascularity of the labyrinth. No operation of any kind can possibly improve the *hearing* in such cases.

The relief from tinnitus and vertigo which follows the operation of tympanotomy and removal of the incus, must be due to the liberation of the stapes and diminished intra-labyrinth pressure. The latter relieves the motor filaments of the auditory nerve, the distal element in the nervous structures in the labyrinth unaltered by the catarrhal disease in the drum-cavity, and motor disturbances and defective equilibration cease.

Since writing the above I have discovered an account of a post-

mortem examination by Bezold,[1] of Munich, in the case of a man 30 years old in whom there had been marked chronic deafness. Perception of low tones was well maintained, but that of high tones greatly diminished. There was poor bone conduction. Rinne's test was positive and the membranæ were normal.

Diagnosis: Nervous deafness. Death from typhoid fever. At the autopsy there was found atrophy of the nerve-fibers in the first and second whorls of the cochlea. *The annular ligament of the stapes and the membrane of the round window were intact.*

[1] Annales des Maladies de l'oreille, etc., February, 1894.

TREATMENT OF OTITIS MEDIA PURULENTA CHRONICA.

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THERE is no doubt that there are still some practitioners who regard a discharge of pus from the middle ear as a simple and comparatively unimportant matter; there are those among the laity who believe that an ear discharge may be even beneficial to the individual, giving vent to a poison which, if stopped, would work greater devastation at some other less accessible point. We can only say that one notion is hardly less erroneous than the other, for we have come to know that as long as a suppurative process in the ear continues, no difference how slight that may be, it constitutes an unceasing menace to the life of the individual. We have only to glance at the following statistics to be convinced of the truth of this assertion:

Pitt found in 9,000 consecutive autopsies at Guy's hospital that suppurative otitis was the cause of death in one out of 158 cases.

Barker collected the statistics of three other London hospitals and found that among 8,020 autopsies suppurative otitis was the cause of death in one out of 179 cases.

Bezold gives the percentage of deaths in 325 cases of suppurative otitis as 1½ per cent. Chauved, Schwartze, and others have given their statistics, but it is not from these that we should draw our conclusions, for the gravest cases do not come to the special clinics, but to the general hospitals. We will be nearer right if we accept the percentage of Barker (*loc. cit.*). This writer collected the statistics of the University hospital, London, and found that 820 cases of acute and chronic suppurative otitis gave a mortality of 2.5 per cent.

It would seem, too, that a proper appreciation of the factors which tend to perpetuate an ear discharge is not so general as it

should be, or else we would not see so many acute cases terminating in chronicity, nor meet so frequently in our clinical practice those cases which go on suppurating for years and years, and which yield such gratifying results after a few weeks of proper treatment.

This thesis is prepared with the purpose of calling attention to the foregoing facts, and laying before the practitioners of this commonwealth the simpler methods of treatment of otitis media purulenta chronica which, if followed out, will be of great advantage to their patients and themselves.

Rarely does a chronic suppuration in the middle ear begin as such; more rarely still does it begin as the result of some pre-existing inflammation (*e. g.*, eczema) of the external auditory canal, still more rarely does it spread from the labyrinth. By far the large number of cases have their origin in an acute attack, in the course of which the tympanum becomes perforated.

A simple acute refractive otitis comes to an end usually under favorable conditions and careful treatment in from two to three weeks. Exceptional cases may end as soon as two or three days. If a case persists for over six weeks it should be considered chronic. Predisposing conditions which tend to convert the acute into a chronic process, such as the cachexias, tuberculosis, scrofula, syphilis, diabetes, etc., should be treated according to the usual constitutional methods.

The most frequent local cause of the persistence of the suppurative process is retention of secretion. The anatomical formation of the middle ear is most favorable to this, and when it does occur the irritating secretions continuously reacts upon the mucosa and the bone beneath or in the middle ear, producing thickening granulation, ulceration, etc., of the former, or even caries or necrosis of the latter. This retention may be due to neglect or to insufficient means of drainage, that is, the suppuration may be extended in the attic; the perforation may be too small or too high in the membrane to allow of free drainage. In many cases, however, simple syringing of the ear will, if done properly, bring about cessation of the inflammatory action. For this purpose, in cases where the perforation was large, I have been using acid solution of corrosive sublimate 1-5000, using a pint or a quart twice or four times or even oftener daily, according to the amount of secretion. In some cases the frequent and constant use of this agent will become irritating, especially in the very young, or if the Eustachian tube be very patulous it may get into the pharynx and thus cause muranolism, so that some care must be observed in its employment,

but in a large number of cases its use is followed by very beneficial results. I have been using lately a product of the French laboratory known as phenosalyl. It may be used in double the strengths in which carbolic acid may be employed. I have found it very unirritating and trustworthy, but it is too expensive for dispensary work. Many other antiseptics may be used in the ear, carbolic acid 2 to 5 per cent, boric acid, saturated solution, or a teaspoonful of a 20 per cent solution in alcohol may be added to a half pint of warm water. But when the pus is offensive in odor the boric acid is not sufficient to overcome it. A teaspoonful of a 10 per cent (alcoholic) solution of salicylic acid to three pints of water may be employed, or a weak, light claret-colored solution of permanganate of potassium, or chlorin water (one part aqua chlori to three parts water). It is well to change the medicament from time to time, and especially if one or another sets up an irritation.

It is always well to use the air douche, either Valsalva's or Politzer's, in the midst of washing out, in the endeavor to completely evacuate the pus. It is also requisite in many cases, and especially in those having a small perforation, to employ the injection of antiseptics into the middle ear via the Eustachian tube. Schwartze believes this method of treatment to be of the greatest value. I am quite convinced that his praises are not wrongly bestowed. To do this we may employ the catheter or we may, in cases of double perforation, use Gruber's method. In this, a syringe having a capacity of three and one-half ounces with a well-rounded end, capable of completely filling the nostril, is employed. The process is conducted as follows: "The patient being placed as for catheterization, and having cleared out his nose, holds his head so that the nasal meati will have a horizontal direction. The operator standing in front and taking the syringe in his right hand, slightly raises the tip of the nose with the thumb of the left hand, as in the introduction of the catheter, and inserts the nozzle of the syringe within one nostril, while he at the same time closes the other nostril by pressure upon its side with the index finger. The syringe being held horizontally, with the nozzle free from the walls of the nostril, is then emptied with the requisite amount of force. During this procedure the soft palate is instinctively held tense, so as to shut off the post-nasal space from the pharynx, and so preventing the fluid from escaping below. The tongue is also held back and pressed against the soft palate so as to close the passage more firmly. The fluid which enters the

post-nasal space through one nostril can in the majority of cases only flow round toward the opposite Eustachian tube, and so through the opposite side of the nose. If then the latter is closed the liquid under the pressure employed passes through the Eustachian tube, when this is patent, toward the middle ear. The degree of force with which the fluid enters the middle ear will depend upon the force with which the syringe is emptied, upon the completeness with which the outlets at the nostrils and palate are closed, and the permeability of the Eustachian tubes. There may be slight dizziness after this procedure, but this usually disappears after it has been used a few times.

It is as an antiseptic in flushing out the middle ear through the Eustachian tube that phenosalyl acts so satisfactorily. While it has twice the strength of carbolic acid it is far less irritating, and is equally active in destroying the disagreeable odor, while it is much less offensive to the taste of the patient. It is of the utmost importance that in all of these solutions the water should be sterilized just before using. This is easily done by boiling the water ten minutes before adding the medicament. Pure water should never be used as it is irritating to the mucous membrane of the nose and Eustachian tube. Common table salt, one-half teaspoonful to a quart, renders the water bland and makes a bland solution.

After all irrigations the ear and auditory canal should be carefully and thoroughly dried by means of cotton and the cotton carrier. The auditory canal should then be carefully and not too tightly packed. The use of a plug of cotton in the most external opening of the canal is insufficient, and I am inclined to think that an antiseptic gauze is preferable to cotton. This should be carried well in; in cases where there are large perforations the gauze may even enter the middle ear. The packing should be changed as often as it becomes moistened by the discharge, and even if this does not occur it should be changed once or twice a day. This packing not only protects the coverings of the external auditory canal, and tends by the presence of the antiseptic material in the gauze, to prevent the pus from decomposing; but it also aids in drainage as we have learned from general surgical experience.

There are cases in which the syringe cannot be used on account of the nausea, dizziness, etc., which the stream of water impinging on the structures of the middle ear produces. In such cases we may remove the discharge by means of Gruber's syringe by suction; we must "dry clean," according to the method of Becker,

that is by means of the cotton pledget. This is a part of that author's "dry method." And it brings us to say that we cannot indorse the indiscriminate use of dry powders in the ear. In fact, they should be used with the greatest care. and then only by the medical man who has become more or less dexterous in aural manipulations. They should never be used in the young, or where the perforation is small, or situated high up in the membrana. Indeed, in such cases, the use of powder in the ear may be followed with disastrous results by the powder stopping up the points of egress for the pus. However, we do not mean to discourage the employment of powders altogether. In those cases which do not cease in about a month under the treatment we have just described and where there is an ample opening in the membrana, it is our custom to insufflate boric acid. When, after a few days trial, the discharge is not diminished, and small granulations remain, we use a powder composed of three parts of finely-powdered alum to ten parts of boric acid. These insufflations at first are made daily; then less frequently, according to the amount of discharge. Equal parts of salicylic acid and magnesia makes a very satisfactory combination. Sozoiodal of zinc 3 to 5 per cent in a neutral excipient has been lately extolled, but we have not as yet had sufficient experience with it to allow us to express an opinion. As Politzer says, "it is always well to change the medication from time to time; we seem to get different results from the same drug in different cases and at different times.

Where a fluid application is required to destroy granulations, heal ulcerations, reduce congestion, we give preference to chromic acid solution, carried carefully into the middle ear by means of cotton on a cotton carrier. Or in cases of small perforation we may make an instillation of absolute alcohol, two or three drops, the patient retaining it for two or three minutes with the head inclined to the opposite side. This is very effective in destroying granulations and reducing the congestion of the mucous membrane lining the middle ear, but it is liable to produce pain and vertigo, in which case we should cease its use.

Schwartze recommends a solution of liq. plumbi subacetatis in distilled water, 1 to 10 per cent; or zinc sulph., 2 to 10 per cent; or cupri sulph., 1 to 5 per cent. In those cases of long duration and after other remedies have failed we may employ the caustic solutions of nitrate of silver. Five to ten drops of a 5 to 10 per cent solution should be employed, and the patient directed to turn the head in various directions so that the solution shall reach every portion

of the middle ear possible. In many cases it will run through the Eustachian tube to the pharynx; this is more beneficial than otherwise, but if the other ear is healthy the head should not be inclined too far to that side or the medicament is liable to run through its Eustachian tube. The nitrate produces on the diseased mucosa a whitish coating; as soon as this comes away the instillation should be repeated, but not before. This happens twice daily in some cases, especially when the mucosa is swollen. Usually the instillation is required daily. After a few applications we often see the most beneficial results, The nitrate's action may be neutralized at any time when its action is thought to be excessive by a concentrated solution of common salt. Indeed it is well always after the nitrate has been in contact with the mucosa a minute or less to remove it and wash out with the salt solution. Painting the outer skin with a 10 per cent solution of iodid of kalium protects it from the discoloration which the nitrate is otherwise liable to produce. If, in the course of the employment of the nitrate or of any of the astringents an acute otitis intervene, the use of these remedies should be stopped until the acute inflammation has come to an end.

Before any of these applications are made it is understood that the ear has been thoroughly washed out either through the external auditory canal or through the Eustachian tube, and that it has been thoroughly dried with cotton on the cotton carrier.

After the discharge has ceased, the air douche should be used for some little time, first once a day then three times weekly, then once a week. If there is an occasional discharge of mucous from the ear we may cover the mucosa of the tympanum with a thin film of alum. All pathological conditions in the nose or cavum pharyngeus must be carefully treated. The ear should be protected by wearing a cotton plug in the auditory canal for a month or more, and this should not be removed except in a room kept at an even temperature.

ANNALS OF OPHTHALMOLOGY AND OTOLOGY

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CLINICAL MEMORANDA.

TWO CASES OF HOMATROPIN IDIOSYNCRASY.

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THE two cases which I report are not of a class that is at all very unusual, yet the extreme susceptibility to the influence of a mydriatic, as shown in both, are of interest as "clinical memoranda."

Case I. Staggering gait, partial collapse, and hallucinations after one instillation of a solution of homatropin:

C. B., aged 17, consulted me relative to an annoying headache. He was an overgrown boy, and lacking muscular development. Neurotic tendency obvious; does not use tobacco or alcohol; family history good, After an examination, an an error of refraction being detected, I prescribed a solution of homatropin (4 grs. to the ounce), directing him to use one drop in

each eye for six consecutive times, and at ten minute intervals. After one instillation, he neglected the second for about half an hour, and "feeling queer" came to my office. Having at this time, apparently, a complete paralysis of accommodation and decided mydriasis, I sat him in the chair and started to test him. He could scarcely speak, the words being almost inaudible, and the syllables interrupted. He was greatly confused with the chart, not being able to follow the letters in the lines. He told me that he saw men walking about the office, and that when he spoke to them they would disappear, and to return again. I had him rest upon a couch and he was soon able to get home with the assistance of a friend. His pulse was small and rapid, face flushed, and he staggered without an assisting arm. He was all right next day, but the subsequent tests were made without a mydriatic, and aided by the retinoscope and ophthalmometer.

Case II. Persistent paralysis of accommodation, and mydriasis after the use of homatropin.

J. W., aged 19, white. General health good; muscular development above the average. Has retinal hyperesthesia. Used a solution of homatropin (4 grs. to the ounce) to determine refractive status. The eye proved absolutely emmetropic. Has very insufficient interni, having an adduction of 12°; abduction 9°. The homatropin solution was used for two days and just one hour before coming to my office. The effect was very decided, and unpleasantly persistent for both patient and myself, since I had informed him he would have the use of his eyes in about forty-eight hours. The mydriasis persisted for three weeks, and about the same length of time elapsed before he could use his eyes at the near point at all. It must be remembered that homatropin was used and I tremble to think what time it would have taken for the effect of atropin sulph. to have passed off. In fact, the patient told me after, strange to say, that an oculist had him under the influence of atropin, and he had been a much longer time in recovering. His family physician has since informed me that the one two-hundreth of a grain of hyoscin produced dilatation of the pupil.

504-5-6-7 Dayton Building.

TREATMENT OF PURULENT RHINITIS, SYCOSIS, AND ECZEMA OF THE ALÆ NASI.

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THE simpler diseases met with in practice frequently tax the physician's patience and resources beyond one's expectations.

The affections named in the title of this paper may be placed in this class, and is my excuse for presenting their treatment. Although similar in appearance, symptoms and situation, they differ greatly in etiology, but respond more or less quickly to the same treatment.

Cases of purulent rhinitis are infrequent excepting in childhood, when they usually accompany or precede a more or less severe ophthalmia. It is probable that the nasal symptoms are always secondary to the ophthalmic and result from an extension of the inflammatory process through the lachrymal canal. The nasal discharge is profuse and milky in appearance and very irritating to the skin of the upper lip which is frequently covered with moist crusts. Sycosis of the hair follicles in the interior of the alæ nasi is chiefly confined to adults. It causes considerable itching, tenderness and dryness, with the formation of thin, dry scales, and is so nearly allied to eczema that it is difficult to differentiate them. Eczema of the nares, however, usually accompanies eczema of other parts of the body, and is influenced by the general treatment employed for this disease. Various powders, lotions and ointments are prescribed for these affections with indifferent success. In nitrate of silver, however, we have almost a specific. Its well-known astringent and alterative qualities, when locally applied, are well exemplified in these affections. Any alkaline solution, followed by peroxide of hydrogen, may be employed to remove the crusts and discharge, and after drying, an application of ten grains to the ounce solution of nitrate of silver is made.

In the majority of cases no other treatment need be employed; an occasional case of eczema or sycosis may be assisted by some oily preparation of zinc, such as:

℞ Acidi tannici .....gr. iii.
Acidi carbolici.....gr. ii.
Benzoinalis .....ʒss.
Ung. oxidi zinci.....qs ad ʒi.
M. ft. Ungt.
Sig. Apply at night.

Short reports of a few cases will show their character and quick response to treatment.

Case I. M. D., aged 2½, came to the hospital November 6, 1893, suffering from purulent rhinitis and conjunctivitis of three weeks duration. Both alæ nasi were covered with crusts on their interior surface, and a considerable portion of the upper lip was in a similar condition. Various powders and ointments had been used with little effect before she came to the hospital. After removing the crusts, cleansing and drying the parts, a solution of nitrate of silver, ten grains to the ounce, was applied to the anterior part of both nares as far back as the opening of the lachrymal duct, also on the cutaneous surface of the upper lip wherever it presented a red appearance. This patient returned on November 8th, much benefitted, and when seen again on the 12th was perfectly well.

Case II. ———, aged 9, was first seen November 27, 1893. Small dry scales covered the cutaneous surface of the interior of the alæ nasi and at the lower margin small cracks were noticeable, which caused considerable tenderness. After cleansing the parts a twenty-grain solution of nitrate of silver was applied.

November 29th, patient returned markedly improved and on his next visit, December 1st, was perfectly well.

Case III. November 27th. M. K., aged 11, has had sore nose for several months. A diagnosis of eczema alæ nasi was made, and an ointment containing carbolic acid and oxid of zinc ordered. This patient returned on January 17th, very little improved. A ten-grain solution of nitrate of silver was then applied every other day for a week, at the end of which time the patient was perfectly well.

Case IV. M. M., aged 11, seen March 12th. Both alæ nasi filled with scabs of dried mucous of six weeks duration. The scabs were removed and nitrate of silver applied. When seen five days later the nares were quite clear.

Case V. Mary McC. Seen first on March 12th; had purulent ophthalmia and rhinitis for the previous seven weeks. The eye symptoms preceded the nasal discharge three days, and under treatment, were nearly well, but the nasal discharge and crusts continued unrelieved although various methods of treatment had been employed. The daily application of ten-grain solution of nitrate of silver completely relieved this case in six days.

Case VI. S. K., aged 12, seen first April 2d; had purulent ophthalmia and rhinitis of four weeks duration. Four applications of a ten-grain solution of nitrate of silver at intervals of two days relieved all the symptoms.

Case VII. April 23, 1894. K. M., eighteen months old, for two weeks had a thin, yellowish-white discharge from both nostrils; the cutaneous surface of the alæ nasi and upper lip was very red and covered with thin yellow scales.

This case responded to two applications of silver nitrate made within four days.

Case VIII. F. M., aged 7, brother of Case No. 7. A week after his sister's nose began to discharge, his also was affected in a similar way. The redness and irritation was confined to the interior of the alæ nasi, and responded to two applications of argent nit.

Case IX. J. McG., aged 7. May 7th. Purulent rhinitis and ophthalmia of four weeks duration. Inflammation extending to the upper lip. Twenty-grain solution of nitrate of silver applied. May 11th, nearly well. Silver solution ten grains to the ounce applied. On return to clinic on the 12th, the discharge and inflammatory symptoms had entirely subsided.

In looking over the histories of these cases, we find that about five days was the average time required for their relief by the nitrate of silver treatment. In private practice, this period may be shortened by supplementing the first application of the ten-grain silver solution with subsequent daily sprays of one-grain solutions.

22 East Forty-Second Street.

NEW INSTRUMENTS.

By Francis B. Kellogg, M. D.,
of Tacoma, Wash.

GRUBER'S POST-NASAL CURETTE.

I WOULD like to call the attention of the profession to a post-nasal curette which is the production of the veteran aurist, Prof. Joseph Gruber, of Vienna.

It is a modification of the Gottstein post-nasal knife, but is radically different in construction, having only the method of use in common with that instrument.

The Gottstein knife has a thin cutting blade whose edge when in position in the naso-pharynx presents backward and downward. It is slightly crescentic in form and supported by two uprights which unite below giving it the general shape of a curette, though its action is a cutting rather than a scraping one.

Gottstein's Post-Nasal Knife.

The method of using both the Gottstein and Gruber curettes is as follows: The surgeon faces the patient who, if a child, may be anesthetized and held in the lap of the assistant. The mouth is opened, by force if necessary, and the working part of the instrument is slipped behind the soft palate, the tongue being depressed by the index finger of the left hand. The handle is now allowed to sink which throws the top of the knife or curette towards the front of the naso-pharynx until it impinges against the septum. It is then pushed gently upward and backward (referred to the patient), when the adenoid tissue will be felt to engage in the loop of the instrument. Then, increasing the pressure, especially upward, the blade is made to follow the curve of the naso-pharyngeal wall, hugging it as closely as possible and cutting away the dependent vegitations. This is accomplished with one vigorous sweep of the instrument during which the handle is elevated from its dependent position and carried upward towards the face, landing the loop and the growth upon the dorsum of the tongue.

Before proceeding to detail the advantages of the Gruber curette, I will briefly mention another devised by Prof. Politzer which is also a modification of the Gottstein. It differs from the latter in having at the middle point of its blade a re-entering angle, giving to the loop the outline of a heart. This angle is supposed to fit saddlewise the free edge of the vomer where it is continued into the roof of the vault, and to remove any tissue which might be protected by the latter from a straight or convex edge. The advantages of this instrument are, in my opinion, theoretical rather than practical. In adjusting it to the peculiarities of the anterior naso-pharynx it is unfitted for every other part. After leaving its central septal guide which extends only a very short distance into the cavity, the re-entering angle acts as a protector to all the adenoid tissue in the middle line over which it passes. This part is apparently sacrificed to reach the sides of the growth which impinge upon and occlude more directly the aural and nasal orifices. This end, however, can be much more effectu-

GRUBER'S POST-NASAL CURETTE.

ally accomplished by the Gruber curette, as will be seen later. Personally, I incline to the belief that the removal of the bulk of the growth in the middle line accomplishes all that is necessary or desirable. The portions which escape in the sulci beside the vomer are insignificant and can exercise no serious pressure laterally after they have adjusted themselves to their new mechanical conditions.

There is no doubt but that the introduction of the Gottstein knife marked an epoch in the treatment of post-nasal adenoids. It is infinitely superior to all forms of forceps, which can only be used in an adult pharynx, assisted by inspection, while the great majority of cases occur in children. Some form of cutting forceps is useful occasionally as an adjunct, but the curette is universally applicable. There is with this no danger of injury to the parts, while if vigorously operated, one sweep accomplished in the twinkling of an eye will, in most cases, remove all superabundant tissue from the naso-pharynx.

The Gottstein instrument is widely known and used. Gruber's curette is little known outside of his own clinic. The super-

iority of the latter is a matter of experience rather than of demonstration. I am confident it will be conceded by anyone who will give them both a fair trial. In an effective surgical instrument, simplicity is an important factor. The Gruber curette is simpler than the Gottstein. With its working part at right angles to the shank, the application of pressure in the proper direction is simplified and rendered more effective. There is nothing about its appearance to suggest a cutting operation to the patient. Its cutting edge, however, is most efficacious, and instead of being limited to the cross section, follows the loop throughout its entire circuit. In this particular its superiority to the Gottstein knife is evident. The latter, where the growth has a base too large to be enclosed in the loop, is compelled to do more or less dragging and tearing at the sides, and the growth is much more apt to be left hanging in the throat by an undivided portion.

With the Gruber curette, which is essentially a ring-knife, it comes away clean. Again where the growth is large and more than one application is necessary, by directing the curette first to one side and then to the other, the top of the loop which is circular, fits approximately into the sulci on either side of the vomer accomplishing all that was intended by the Politzer instrument. It was, I believe, the original design that the instrument should be operated, as a rule, in this way, and to that end Prof. Gruber had it made in three sizes. This may sometimes be found an advantage, but in the large majority of cases, the one size as made for me by Tiemann & Co., upon a model brought from Vienna, applied in the middle line will be found more practicable. The thick and rounded shoulder prevents any contact of the edge with, and hence, any injury to the Eustachian orifices. The loop of the instrument is about the same size as that of the Gottstein and will remove an equal amount of tissue, doing it more easily and smoothly.

My attention was first directed to this curette by seeing it used in Prof. Gruber's clinic at Vienna, by Dr. Müller, assistant to both Professors Gruber and Politzer. With abundant opportunity for testing the comparative merits of the three instruments here described, he declared with enthusiasm for the Gruber. My own experience has been a similar one, and I feel confident that a trial will commend it to the favor of the profession.

REPORT ON PROGRESS—OPHTHALMOLOGY

REVIEW OF CURRENT AMERICAN AND ENGLISH OPHTHALMIC LITERATURE.

By Charles H. May, M. D.,
of New York.

CONCERNING THE HISTORY OF THE DISCOVERY OF REFLEX OCULAR NEUROSES, AND THE EXTENT TO WHICH THESE REFLEXES OBTAIN.

S. Weir Mitchell, M. D., Philadelphia—*Medical News*, April 28, 1894.

Dr. Mitchell's article is a very interesting one on account of the delightful style in which it is written, because it contains many historical facts, and because it presents a perfectly fair statement of the position which the great majority of oculists and neurologists hold on the question of heterophoria in its relation to certain neuroses.

Dr. Mitchell believes that Dr. Ezra Dyer, Philadelphia, and Dr. J. Haskett Derby, Boston, "were the first Americans to bring us home from Germany modern views as to the corrections to be accomplished in disorders of the optic apparatus." From 1862 to 1864 he saw cases of headaches due to ocular troubles with Dr. Dyer. In the *Medical Reporter*, 1874, he described headaches due to eye-strain; these cases were corrected by Dr. Thomson. In the *Am. Journ. Med. Sci.* for April, 1876, he again wrote on the subject announcing certain conclusions, "having learned that not only headaches, but vertigo, nausea, anemia, and much disturbance of the general health might be due to difficulty of the eyes." He finds it difficult to understand Stevens' claim on p. 8, of *Functional Nervous Diseases* (published in 1887), that "no general principle of sympathetic or reflex irritation had, however, been formulated, and the first *printed* announcement of the existence of such a principle was made by myself (Stevens), in a paper presented to the Albany Institute in the early part of 1876." Mitchell mentions a paper by Stevens in the *New York Medical Journal* for June, 1877, "Light in its Relation to Disease," and presumes this is the same as the one presented to the Albany Institute, December 19, 1876.

He concludes his paper with an able presentation of his views on heterophoria as a causative factor of certain reflex ocular neuroses, especially chorea and epilepsy, as follows:

"Before leaving the subject I would like to say a few words as to the more recent claims made by Drs. Stevens and Ranney. Men who run into extremes are often those who in the end teach proportioned wisdom to such as know wisely to profit by the excesses of others. This is going to be the case in regard to the extreme views enunciated by these two gentlemen. There is in them an element of occasionally useful truth. Where they appear to me to have most distinctly failed I have endeavored to point out to the best of my ability.

"At my clinic, for two years or more, Dr. G. E. de Schweinitz examined with the utmost care the eyes of all of the numerous choreic children who appeared at the Infirmary for Nervous Diseases. The cases extended to one hundred, and although many of them have been given the most careful attention, I do not think that any notable good in the way of cure of chorea was obtained by correction of refractive or other errors. In the disorder I first described as 'habit-chorea,' glasses have now and then been found to be useful, but not always; nor should we expect to find anything else in regard to chorea proper. It is largely a disorder of seasons in the first place, and secondly it is a disease easy enough to treat. The great mass of cases get well without much difficulty; in a large number of instances the disease is self-limited, and gets well if let alone, nor has it the gravity which one would be led to expect from reading Dr. Stevens' early paper. Dr. deSchweinitz, will, I am sure, entirely agree with the conclusions I have reached as being his opinion and mine, to the effect that we have gotten no good by correcting the eyes in cases of chorea. I came to this matter with a perfectly free and unbiased mind, but this was the end. Choreal children with ocular defects got well under arsenic alone quite as soon as others who had no like disorder of vision; or the choreas got well, and the hypermetropia remained unaltered and unglassed.

"And now as to epileptics I have met with no better fortune. As regards this, I have read with care the conclusions of Stevens and Ranney, and have wished I could have seen some of the epileptic persons whom they so successfully treated. Those who have treated epilepsy know that in some respects it is a very curious disease. If we take an obstinate epileptic case and put it suddenly under new conditions, in a new place, with altered diet

and different surroundings, we occasionally find marked changes for the better, which are usually temporary. This is frequently the case at the infirmary. When an habitual epileptic is put there for the purpose of being watched, in order to determine the quality of the spasm, weeks and even months may pass without the patient having an attack, when before this they occurred every day; and this, too, despite the discontinuance of all drugs. I know of two cases of men who had such attacks before entering the army, and under the new surroundings were entirely freed from them. These are the things which make neurologists careful in concluding for the value of a new agent in this sad malady until the cure has lasted a long while, and been observed with care. Still, there are cases found in Ranney's last contribution ('Eye Treatment of Epileptics,' *New York Med. Journ.*, Jan. 13, 20, and 27, 1894) which seem to have ended in cures. I can only say that I have failed to obtain like results in our own attempts to cure epilepsy by the correction of refractive errors or by cutting tendons. I neither believe nor disbelieve. When I can see two or three cases of cure of undoubted epilepsy by tendon-clipping, I shall want to recommence. So far I have had only disappointment, and others here who began to cut tendons with enthusiastic hope, have, like me, got no good for their patients out of an industriously acquired experience in this direction. I shall be but too happy to drop the dubious mood in which I am as to this whole matter.

"I believe, as regards tenotomy *versus* prisms, that these gentlemen have taught us a lesson which we may with moderation usefully employ. I have called your attention to the matter because I am well assured that if, as to tendon-cutting, the gentlemen whom I have so frankly criticised have gone too far, you, I think, have not gone far enough.

"I have tried as to this whole matter to be fair and courteous, and yet to set the history right. As concerns too positive views of treatment, time alone will entirely settle these.

"And now a word or two as to your own relations to the disorders in which we see ocular troubles, or as to those in which these are the cause of symptoms.

"I trust the day has gone when you will put on prisms, or cut the tendons of atoxic cases without perceiving the special source of the defects; but a more lasting evil arises out of the fact that sometimes you do not comprehend the fact I have long tried to teach, that eye-strains lasting through the years of development may make permanent headaches which no glass will do more than partially relieve.

"Again, you often see people who owe to ill health a suddenly intensified capacity to feel an eye-strain. You glass them and expect too much. Neither you, nor any specialist, can, or should, escape from a sense of larger responsibility, and if you cannot hold your patient when you have corrected the eyes, it is imperative that he learn from you the fact that he needs more than merely the best correction of the eyes. A careful study would often tell you that a man may have two or three different forms of headache, and that it were well to understand that while your glasses may cure an occipital ache, for instance, he may still continue to have neuralgic hemicranial pain, or an occasional attack of gouty headache.

"I suspect that our own oculists are far in advance of the English and most Continental surgeons, in the care with which they correct defects in refraction. I fancy that they sometimes fail to get the best possible results because of difficulties due, it may be, to personal peculiarities in patients, or sometimes to the belief that slight muscular defects may be let alone when the refraction has been accurately corrected."

PARALYSIS OF THE SUPERIOR RECTUS AND ITS BEARING ON THE THEORY OF MUSCULAR INSUFFICIENCY.

Dr. A. Duane, New York—*Archives of Ophthalmology*, April, 1894.

Dr. Duane believes that paresis of the superior rectus and indeed of all the eye muscles is much more frequent than has been heretofore supposed. He himself has seen six uncomplicated cases of paresis of the superior rectus and four others in which, although a complication existed, the complication had obviously no etiological connection with the paresis. He presents a tabular report of these and five other cases, exhibiting the symptoms, course, and treatment. The symptoms are comparatively slight, being mostly due to the exophoria which is the necessary consequence of the paresis of an adductor such as the superior rectus is. For treatment he recommends in extreme cases advancement of the paretic muscle, or, if the affection happens to be associated with esophoria, tenotomy of the superior rectus of the other eye. In other cases prisms correcting the exophoria and hyperphoria may answer all requisites. The most rational treatment, however, is to remedy the exophoria by training the adduction with prisms until the patient can use his interni at all ranges with facility. In many cases the symptoms are too slight to require any treatment. These cases all occurred in young people and without any apparent exciting cause, and the author is inclined to look upon them as of con-

genital origin. He further regards them as of significance in the bearing they have upon the theory of heterophoria. The latter condition, he argues, being really, as von Graefe called it, a latent squint, should be divided into the same categories as a manifest squint; and we ought not to think of attempting to treat a heterophoria until we have ascertained, as we can do in almost every case, whether it is due to the anatomical disposition of the parts (concomitant heterophoria), to paresis, to spasm, or to excess or deficiency of accommodative effort. In his own experience, concomitant heterophoria has appeared to be the most frequent variety, although paretic heterophoria is quite common; spastic heterophoria is less frequent, although not so very rare; and accommodative heterophoria, or the kind which can be remedied by glasses, is comparatively infrequent.

ON THE BLINDING OF THE RETINA BY DIRECT SUNLIGHT—A STUDY IN PROGNOSIS.

George Mackay, M. D., F. R. C. S. E.—*The Ophthalmic Review*, January, February and March, 1894.

The writer summarizes the data for prognosis as follows: 1. The time which has elapsed since the accident. 2. Degree of impairment of visual acuteness for test type and colors. 3. Extent of scotoma and especially of absolute area. 4. Gravity of ophthalmoscopic changes. 5. Presence or absence of oscillating movement. 6. Of metamorphopsia. 7. Local and general healthiness of subject. 8. Refraction of the eye. 9. Natural pigmentation of the fundus. "An uncorrected ametropia and a fundus rich in pigment may confer some protection."

In cases in which the eye has previously been healthy and the vision normal, he divides the cases into four classes:

Class I. V. = $\frac{1}{3}$ or better in the *first week*—good chance of practical recovery in one month.

Class II. V. = $\frac{1}{3}$ in the *second week*—fair chance of practical recovery in three or four months.

Class III. V. = $\frac{1}{3}$ in the *third week*—will probably recover slowly in five or six months, but chances are against complete restoration.

Class IV. V. poorer than $\frac{1}{3}$ at any time, though rapid progress in first month—poor chance of recovering V. of $\frac{6}{6}$. "Hitherto no case with V. poorer than $\frac{1}{3}$ has regained $\frac{6}{6}$." By "practical recovery" he means cessation of obstructive defect.

Treatment should be preventive. "A glass so dark that no

object illuminated by diffuse daylight is visible through it, must at least be used if one would view even the January sun with impunity. One should also give time for gradual adaptation of the retina, and test the suitability of the glass by looking through it first at the sky near the sun; and so soon as one has looked directly at the sun for a second or two it is well to look away altogether and see if there is any persistence of the impression. If any is found, the tint of the glass must be deepened." As to treatment after the injury, he advises protection from great alterations of light by the constant use of dark glasses (No. 3 London smoke with side pieces), rest from eye work during the first month and attention to the general health. If inflammatory symptoms threaten, diaphoretics and confinement to darkened room. He does not believe that any good results from the use of strychnin hypodermatically or galvanism, cases having improved as much and as rapidly without as with either.

LOCAL OCULAR THERAPEUTICS BY SUBCONJUNCTIVAL INJECTIONS OF SUBLIMATE.

Dr. A. Darier, Paris—*The Ophthalmic Review*, April, 1894.

Darier has adopted this treatment of ocular disease for several years past. In localized infection when surgical treatment, such as the cautery, is not feasible and the lesions are not superficial he advocated the injection of sublimate into the infected focus or into the surrounding parts. He advocates the use of this method in sympathetic ophthalmitis and claims efficiency in cases of his own and of others. Good results have followed this method in secondary, late traumatic and in post-operative infection; it is of great usefulness in infecting ulcer of the cornea. Even in diseases of the deep-seated membranes of the eye (irido-choroiditis, retinitis, neuritis, etc.) he claims these injections have, in many cases, given astonishing results. At the last Congress of Ophthalmology, Dr. Pflueger of Bern, confirmed Darier's results, especially in affections of the choroid. Darier has found subconjunctival injections remarkable in their action in cases of choroiditis or chorio-retinitis when central, recent and not too deep. He speaks of a series of successes in certain cases of infectious retrobulbar neuritis. In grey spiral atrophy of the optic nerve, the results were *nil*; in white atrophies following old inflammatory processes, slight improvement of vision has resulted.

Good effects followed these injections in cases of traumatic affections of the iris and ciliary body characterized by iritis, irido-

cyclitis or even irido-choroiditis. Many cases of gummatous iritis got well rapidly under this plan of treatment, also obstinate cases of irido-choroiditis. Darier has come to the conclusion that these injections are contra-indicated, momentarily at least, when circulatory stasis renders absorption of the medicine difficult or impossible.

[The usual hypodermatic syringe with a flattened platinum needle sterilized in the flame before use, may be employed for these injections. Dose, $\frac{1}{20}$ mg. (0.00005 gram) at one sitting. The puncture is made 1 cm. from the corneal margin, the eye being cocainized, and gentle friction is applied. The pain following the injection varies and is sometimes rather severe. The next day there is much redness and swelling of the conjunctiva; after three or four days the eye will have recovered sufficiently to permit a second injection. C. H. M.]

OPTIC NEURITIS AS A SIGN OF BRAIN TUMOR.

William H. Wilder, M. D., Chicago—*Chicago Medical Recorder*, May, 1894.

With a view of ascertaining what value can be ascribed to optic neuritis as a diagnostic sign in cases of brain tumor, in localizing or in giving evidence of the nature of the lesion, Wilder examined all the accessible literature of the past four years and collected all published cases of intracranial tumor on which a surgical operation or an autopsy had been performed. He obtained 161 cases; thirty-seven of these had been operated upon with a mortality of about 65 per cent. From a study of these cases there results a very interesting paper which concludes as follows:

"The conclusions derived from the study of these cases are against the theory that intra-cranial growths bring about optic neuritis by an increased pressure within the skull; for tumors no larger than a hazel nut may be accompanied by this condition, while others of immense size may encroach upon the brain without causing any trouble to the eye.

"It seems probable that those tumors which cause the most irritation either to the brain itself or to the meninges are the ones that most frequently give rise to this symptom. The malign influence may operate either by bringing about a descending inflammation of the nerve fibers, as suggested by Gowers, or by carrying through the fluids in the sheath of the nerve some morbific material as claimed by Leber.

"If these be double but unequal optic neuritis, the side on which the more intense inflammation exists is probably the side of

the lesion in the brain; similarly, the papillitis is likely to begin first, and the visual disturbance to be more marked in that side.

"The importance of early and repeated ophthalmoscopic examinations as well as records of the visual power and the condition of the fields for white and colors should be emphasized."

ON TESTS OF THE LIGHT SENSE OF THE PERIPHERY OF THE RETINA FOR DIAGNOSTIC PURPOSES.

Dr. Ward A. Holden, New York—*Archives of Ophthalmology*, April, 1894.

The light sense of the retina in ordinary illumination gradually decreases from the center to the periphery. Groenouw has suggested examining the visual field by means of a black point 1 to 4 mm. in diameter on a white ground. Holden finds that altogether similar results are obtained by using pale gray patches on a white ground and that both tests are tests of the light sense purely. In routine work two cards are used: One has a 1 mm. black point on one side and a 15 mm. quadrant of gray having four-fifths the intensity of white on the other. Each of these is seen inward 35°, upward 30°, outward 45°, and downward 35°. Standing two feet away from the patient and having him fix the finger held half way between, the card is moved in from the periphery until the oculist recognizes the spot on one side when the patient should see the patch on the other. The card is then reversed and the test repeated. Thus, as a check on the other, defects in the central zone of the retina are made out.

A second card with a 3 mm. black point and a gray patch having three-fifths the intensity of white is seen inward 55°, upward 45°, outward 70°, and downward 55°. This test is for the intermediate zone of the retina.

For the extreme periphery and to make out absolute defects, a white quadrant of 5 mm. of black may be used. These three tests may take the place of all perimetric tests including color tests, and by their use very slight disturbances of light sense may be determined and the diagnosis of fundus and optic nerve diseases be much facilitated.

IMMEDIATE CAPSULOTOMY FOLLOWING THE REMOVAL OF CATARACT.

L. Webster Fox, M. D., Philadelphia—*Journal American Medical Association*, June 2, 1894.

After describing the preliminary treatment essential in cataract operations and laying great stress upon the observance of many minute precautions, Fox describes the operation as follows:

"After delivery of the lens and all cortical matter is washed out of the anterior chamber, I proceed with the rupturing of the posterior capsule. The instrument used is a gold enameled hook made as delicately as is consistent with keeping its shape. It is of malleable steel so that it may be bent to any angle, which I find is convenient, especially when the eye of the patient lies deep in the orbit. The hook is passed into the anterior chamber, and behind the lower pupillary margin of the iris on its flat side. It is then rotated backward, hooked into the capsule, drawn gently upward to the mouth of the incision, rotated on its flat side again, and then taken out of the chamber. By this means the capsule is torn and the vitreous presses forward between the rent. Very little or no vitreous shows at the mouth of the wound. If it does, I snip it off."

Fox has performed this operation in alternating cases for ten years. In patients thus operated upon, needling or capsulotomy (scissors) was necessary in 15 per cent of cases; where not performed in 75 per cent. He believes there is less danger of inflammation of the eyeball in immediate capsulotomy than in a subsequent operation.

A CAUSE OF FAILURE IN THE SURGICAL TREATMENT OF INTERNAL STRABISMUS.

Howard F. Hansell, M. D., Philadelphia—*Journal American Medical Association*, June 9, 1894.

Hansell speaks of certain cases of internal squint in which the eye is not only turned inward but is also *rotated inward and upward*, and says the oblique deviation has been persistently ignored. "The etiology of the upward deviation is precisely that of convergence. The third nerve supplies other external muscles besides the internal, and unless there is a peculiar relationship or connection, undemonstrated by the microscope, between the nuclei of the ciliary and interni muscles which does not obtain with the others, we would certainly and logically expect a response to the stimulus given by the accommodation to include the superior and inferior rectus and the inferior oblique, and not be limited to the internus and the iris. The rotation of the cornea in consequence of their combined action must be inward and upward.

"I earnestly urge, first, an examination and close analysis of the degree and kind of turning of the cornea by a study of the relative positions of the false and true image of a small gas jet or candle flame at 6 m. and shorter distances; second, a recognition of the

hypermetropia which will be invariably found to complicate esotropia, of its transference with the esotropia in concomitant or alternating strabismus; third, of the permanent upward deviation of the inward turned eye in constant squint; and fourth, emphasize the deductions taught by these conditions, namely, that the hypertropia of the former disappears under correction of the error of refraction and tenotomy of the interni, and in the latter, vertical equilibrium can be obtained only by operation on the vertical muscles.

NOTES FROM FOREIGN OPHTHALMIC JOURNALS.

By Casey A. Wood, C. M., M. D.,
of Chicago.

Studies in the Pathology of the Optic Nerve. Pathology of the Various Forms of Optic Neuritis. Two Cases of Congenital Ophthalmoplegia Externa. Subconjunctival Injections of Sublimate in Episcleritis. Spontaneous Cure of Traumatic Detachment of the Retina. A Case of Astigmatism Corrected by Alterations in the Lens. Life and Works of Quaglino.

The first part of Sachs' studies of optic nerve pathology was published in an earlier number of the *Archiv* and mainly dealt with cases in which growing tumors, aneurisims especially, had exerted mechanical pressure upon the optic nerve and chiasma. A study of the changes thus brought about in the nervous structure is valuable, chiefly because it was found that the alterations were largely confined to the papillo-macular bundle and that they followed the winding course (long before mapped out by the writer, Uhthoff and others) pursued by that bundle on its way to the retina.

Why it is that retrobulbar neuritis (toxic and other) should by preference attack these particular fibers almost exclusively is not

very well determined. Sachs discusses these and other subjects in his second paper[1] in the light of autopsies and microscopical examinations of the parts involved. His study of toxic amblyopia is especially interesting.

Of Groenouw's 185 cases of toxic retrobulbar neuritis only two were in women; Uhthoff has not a single woman among his 138 cases; Brauchli's cases, 144, were all in men; Sachs, however, discovered four women out of ninety-seven cases treated by him. Three of these indulged in both tobacco and alcohol, while the fourth did not drink. The author inclines to the belief of the English school, that it is tobacco and not alcohol that in the mixed cases causes most trouble.

Why is it, he asks, that so few hard smokers acquire toxic amblyopia? He believes that so long as the appetite remains good and the digestion is not impaired, the smoker may indulge with comparative safety, but the moment such an affection as chronic stomachic catarrh shows itself, the eyesight is endangered. This is what commonly happens with people who both drink alcohol and smoke tobacco. Alcohol is more prone to set up catarrh of the stomach than tobacco, and it probably acts as the *predisposing*, while the tobacco stands forth as the *exciting* cause of the resulting toxic amblyopia.

LIFE AND WORKS OF PROF. QUAGLINO.

The first two parts (double number) of the *Annali di Ottalmologia* for 1894 contain a very interesting biography[2] of the late Professor Antonio Quaglino, one of the fathers of Italian ophthalmology. Born in 1817, he began the study of medicine at the University of Pavia, graduating there in 1842. He became Flarer's assistant the next year and continued with him until he left for Milan in 1846, where he settled. He commenced the first of his numerous contributions to medical literature in 1846, with a paper on the operation for artificial pupil. In 1859, he published the first atlas of ophthalmoscopy that had appeared in Italy. The following year he was appointed professor of ophthalmology at Pavia. He translated Donder's classical work on accommodation and refraction. Sclerotomy, as a surgical treatment of glaucoma, is an invention of Quaglino's, and he was among the first to use calabar bean in the treatment of the same affection. For three

[1] Sachs-Weiterer anatomisch-klinischer Beitrag zur Kentniss des Centralscotoms bei Sehnervenleiden., *Archiv. für Augenheilk.*, xxvii, 1.

[2] L. Guita e R. Rampoldi. *La vita e le opere del prof. A. Quaglino.* Anno. xxiii., Fasc. 1—2.

years he was Dean of the Medical Faculty of Pavia. In 1871 he founded the *Annali* and frequently contributed articles to that journal. In 1880 the International Medical Congress elected him as their president, and he had various other honors conferred upon him.

In 1881 he was still actively engaged in practice although 65 years of age. One day, while treating a patient suffering from acute purulent conjunctivitis, he contracted a violent ophthalmia which, in spite of careful treatment and nursing, resulted in almost complete loss of sight.

Although a few years before his death he was able to see a little he never again had anything like useful vision. As his biographers so truly say, it seemed the irony of fate "*colui, che aveva dato la luce a tanti, veneviva condonnato alle tenebre.*" And so, last January, he died full of years and honors, leaving behind him a large number of former pupils and assistants who, well-known in the annals of Italian medicine, continue his work and keep his memory green.

TWO CASES OF CONGENITAL OPHTHALMOPLEGIA EXTERNA.[3]

I have had occasion to observe two very interesting and extremely rare cases of congenital ophthalmoplegia externa occurring in the same family. These two cases are particularly noteworthy from the standpoint of hereditary antecedents as both the father and mother of the patients were entirely healthy. I believe that the publication of these two cases will attract the attention of the profession, and lead to further research in this direction.

Case I. Jean I., aged 25, gardener.

Hereditary and personal antecedents. Negative. His father, 45 years of age, is well; his mother, aged 50, has been entirely deaf for ten years. He has two brothers who are healthy and one sister who has the same lesion.

Actual condition. Dull, stupid expression, diminished memory, hemianesthesia of the right half of the head and deafness in the right ear. Congenital malformation of the index and little fingers of both hands which are disproportionately small. Syndactylism of the middle toes of both feet. Paresis of the sphincter of the bladder; examination of the urine revealed nothing abnormal.

Right eye. Marked ptosis of the right lid hiding two-thirds of the pupil; paralysis of the rectus superior, paresis of the rectus

[3] Gazépy. Deux cas d' ophthalmoplégie congénitale externe. *Archives d' Ophthalmologie*, Mai, 1894, p. 273.

externus, and in consequence internal strabismus of 25° and finally lagophthalmia as a result of paresis of the lower lid. General incomplete muscular action. Contraction and dilatation of the pupil to light physiological and no marked abnormality of accommodation.

Acuity of vision. — O. D., V. = $\frac{1}{8}$.

Examination of refraction. Myopia, four dioptrics O. D., V. = $\frac{2}{3}$.

Ophthalmoscopic examination. Posterior sclero-choroiditis. No other lesion in the fundus of the eye.

Left eye. Ptosis of the upper lid; paresis of the rectus superior, rectus inferior, and rectus externus with strabismus of 35°, and finally lagophthalmia in consequence of paresis of the lower lid.

Pupil normal.

The patient can count fingers with the naked eye at a distance of three meters.

Examination of refraction. Myopia with astigmatism, O. S. Cyl. — 1, axis horizontal with spherical $4^1/_2$, V. = $\frac{2}{3}$.

Ophthalmoscopic examination. Posterior sclero-choroiditis. No other lesion of the fundus of the eye.

Case II. A. ——. aged 18, servant, scrofulous. At the age of 12 she had an abscess in the left temporal region near the tragus, from which complete deafness of the left ear resulted. She still bears traces of the scar.

Actual condition. Memory diminished; complete deafness of the left ear. Congenital malformation of the index and little fingers of both hands which are disproportionately small. Syndactylism of the middle toes of both feet.

Right eye. Ptosis of the upper lid hiding two-thirds of the pupil; complete paralysis of the rectus superior, consequent inferior strabismus; paresis of rectus internus and consequent external strabismus of 20°. The pupil contracts and dilates normally to light and accommodation.

Acuity of vision. O. D., V. = $\frac{1}{2}$.

Examination of refraction. Myopic astigmatism; with concave cylinder, having horizontal axis of 1 D., V. = $\frac{2}{20}$.

Ophthalmoscopic examination. Nothing abnormal.

Left eye. Complete ptosis of the upper lid hiding two-thirds of the pupil; complete paralysis of the rectus superior with consequent inferior strabismus; paralysis of the rectus externus with consequent internal strabismus of 40°; incomplete development of the lower lid and consequent lagophthalmia.

Acuity of vision. O. D., V. = $\frac{1}{3}$.

Examination of refraction. Hypermetropic astigmatism. With convex cylinder axis 135°, V. = $\frac{1}{2}$.

Ophthalmoscopic examination revealed no lesion of the fundus of the eye.

The father of these patients has a brother and sister entirely healthy whose children present the same conditions as these patients. We conclude then, having been unable to trace any hereditary connection from the father to the children, that this lesion is probably due to atavism, that is, transmission from the grandfather to the grandchild.

Unfortunately we have been unable to obtain any exact information as to the health of the grandfather.

EPISCLERITIS CURED BY SUBCONJUNCTIVAL INJECTIONS OF SUBLIMATE.[4]

I send you this letter to make known to the readers of the *Annales d'Oculistique* the rapid cure of a somewhat severe case of episcleritis by subconjunctival injections of sublimate, as M. Gallemaerts has already detailed a case in his report of the trial of this method of treatment in the clinic of our colleague, M. Coppez.

You asked me sometime ago as did also some of my colleagues, the result of my experience with subconjunctival injections of sublimate. I did not at that time accede to the request because I had obtained very contradictory results; in some cases remarkable success; in some, complete failure; sometimes an obvious aggravation of the condition of the patients, particularly in cases of acute iritis. Other clinicians have also recognized the inferiority of this direct application of mercurial treatment in acute inflammation of the uveal tract, as compared with other methods of administration of mercury, by the mouth, by inunction and by hypodermic injection.

At this time, after the repeated testimony of our colleagues, Darier, Dufour, Coppez, Chibret and many others, the utility of subconjunctival injections of sublimate need not be demonstrated. It still remains to clearly establish in what cases their success seems assured and by what mechanism the result sought for is obtained. In this way only can the more precise indications for their use be stated.

During my experiments I have been struck by the frequency with which the episcleral zone in which the injection has been

[4] Terson. Episclérite guérie par les injections sons-conjunctivales de Sublimé. *Annals d'Oculistique*, Mai, 1894, p. 347.

made, has rapidly assumed the aspect of an exudative plaque entirely devoid of vascularization, presenting all the appearances of an eschar of variable extent and depth. Henceforth, it seemed natural to me to attribute the failure of the treatment to the more or less violent local irritation produced by the remedy itself in the cases where a generalized inflammatory reaction of a certain intensity preexisted. From this was obtained a clear contra-indication of its employment in similar conditions.

I have noticed, on the other hand, that this almost complete suppression of vascularization in the zone of the subconjunctival tissue injected, persists for a long time, and since then have appreciated that we might utilize this powerful local action in cases in which exaggerated, but well localized vascularization of this tissue existed. The account of the case of episcleritis cured by injections of sublimate contained in the report of M. Gallemaerts convinces me that our Belgian brethren have already put this idea into practice under the influence perhaps of considerations of another kind. Although this may be the case, this success should not surprise us. Does not episcleritis present quite characteristic signs, infiltration wholly localized in that point of the subconjunctival tissue which we can directly attack with injections? Have we not already sought, often with success, to eradicate this abnormal vascularization by the thermo-cautery or by scarifications, not hesitating to cauterize or to incise the healthy conjunctiva with the sole object of reaching the subjacent affected tissue?

The following case goes to support the preceding considerations:

Mme. B. ——, a very rheumatic subject was attacked four months ago by a typical episcleritis, accompanied by extreme pain, without any complicating iritis, but with slight sclerosis of the portion of the cornea corresponding to the infiltrated scleral area. Warm local applications, anodynes, sodium salicylate and iodid of potassium had no influence on the progress of the disease. Although the treatment was followed out assiduously, the inflammation yielded at one point only to appear at another, always accompanied by intense pain.

A somewhat extended plaque of scleritis existed in consequence of two unexpected relapses within a short time. I thereupon gave an injection of two minims of a 1 to 1,000 sublimate solution in the immediate vicinity and a little posterior to the seat of greatest inflammation. The injection was followed by a strong reaction which lasted three hours, but after the following day the pain disappeared and with it the vascularization of a portion of the

episcleritic tract into which the injection had penetrated. A week later a second injection was made at a point farthest removed from the inflammatory focus, and this was also followed by amelioration. A third injection a week later definitely suppressed all vascularization in the affected region, and completed the cure which has been permanent for more than three months, as has been verified by the patient's occasional visits. The eye presents only a slight trace of peripheral corneal sclerosis which does not interfere at all with her vision.

This is the case which I desire to communicate to my colleagues, to induce them to experiment with subconjunctival injections in an affection of which little is known and which often resists the most apparently rational treatment.

Is the effect of the injection on the subconjunctival tissue more intense when the patients are at the same time under general iodid treatment? Would it cause a more accentuated eschar upon the spot, by reason of a chemical combination of these two agents, similar to that produced on the surface of the conjunctiva by the insufflation of calomel when the patient is taking iodid of potassium by the mouth? This is a question to be settled by observation of cases.

I have not tried subconjunctival injections of sublimate in cases of deep scleritis or of anterior sclero-choroiditis which are ordinarily complicated by more or less acute iritis, and which, therefore, present a serious contra-indication to the employment of this method of treatment.

A SPONTANEOUS CURE OF TRAUMATIC DETACHMENT OF THE RETINA.[5]

Cases of spontaneous cure of detachment of the retina are very rare, and many busy practitioners, even after years of special practice in ophthalmology, have never seen a case. In 1886 our society, (Société francaise d'Ophtalmologie), sent out forms to all its members in order to clear up the important question of retinal detachment from the three-fold standpoint of etiology, pathogenesis and treatment. The reason for making this inquiry was a communication from Dr. Dransart, who, I must say, surprised us by the number of recoveries which he had obtained after iridectomy.

This attempt of our society, notwithstanding the great interest attaching to one of the most important questions of ocular path-

[5] Nouvelle observation de guérison spontanée de decollement traumatique de la rétine. *Recueil d'Ophthalmologie*, Mai, 1894, p. 257.

ology met with only partial success, as our reporter, Dr. Poncet, remarked that of 160 members to whom the inquiry had been sent, only twenty-nine had seen fit to respond.

Of the 398 cases reported by our colleagues, seventy were of traumatic origin, and in the column for observations in the question form no mention was made of a cure by iridectomy or by any other means. "This silence," adds our reporter, "clearly indicates to us that the detachment of the retina has nothing to expect from surgical treatment." But as spontaneous cure was not mentioned at all, I conclude that it must be extremely rare.

In my opinion, although the contrary has been said, traumatic detachment does not at all resemble other detachment, for, besides the fact that it is produced for the most part in eyes previously healthy, it is generally accompanied by inflammatory phenomena which cause more or less rapid resorption of the liquid poured out upon the retina. It is, perhaps, due to this circumstance, and in many cases to a failure to thoroughly examine the fundus of the eye for several days after the traumatism, that a certain number of partial detachments of only temporary duration have escaped the notice of the observer, and have, therefore, diminished the proportion of spontaneous cures.

I published several years ago a case of spontaneous cure of retinal detachment following an iritis which occurred years after the appearance of the disease; to-day I shall report to you a case of spontaneous and rapid cure of traumatic detachment with entire absence of local or surrounding inflammation:

Case. September 10, 1893, a child, aged 9, was brought to me who had three days before received a wound in the left eye from a wooden arrow. Examination of the eye revealed at the internal portion of the cornea, about 3 mm. from the border of this membrane, a vertical contused irregular wound 4 mm. in length, between the lips of which the vitreous humor escaped. The physician who sent the little patient to me said in his letter that after the accident a quantity of the vitreous humor escaped. The iris was largely dilated and immobile and a hyphema 3 mm. in height occupied the base of the anterior chamber, the depth of which appeared normal.

The vitreous body was very turbid and did not permit the fundus of the eye to be seen. The crystalline lens was also not quite transparent and appeared to be slightly luxated inwards. Apparently no pain nor inflammation. Fingers could be counted with this eye at a distance of 30 cm.

I prescribed simply a boric lotion and a permanent wadded bandage.

Eight days later I saw the patient again. The sclerotic wound was closed and the extravasation resorbed, but the entire vitreous body was infiltrated with blood, so that the vision was not so good as at the first examination.

September 24th all the blood in the vitreous body had been resorbed and the central portions of the eye were entirely transparent. The vision had improved, but a large scotoma existed in the external visual field corresponding to a somewhat extended detachment of the retina, situated on the level of the sclerotic wound. Ever since the accident the pupil had remained largely dilated and immobile.

I now prescribed a collyrium with pilocarpin intending to make in a few days puncture and aspiration of the subretinal fluid.

October 1st. The eye and the vision were unchanged. V. = $\frac{1}{8}$ and the same treatment was continued.

November 5th. On examining the patient what was my astonishment to be unable to find the detachment of the retina which had been so clear and evident a month before. As the pupil was still greatly dilated I was able to entirely explore without mydriatics the entire surface of the retina with the ophthalmoscope and was convinced that no trace of the detachment remained.

At the site of the detachment I found only a large pigmented spot situated at the level of the sclerotic wound. The scotoma had almost entirely disappeared, but the mydriasis remained the same. Notwithstanding this, the vision had again improved and with a plain cylinder + 1, horizontal axis, a visual acuity equal to $\frac{5}{8}$ could be obtained.

Since that time I have seen the child several times; the vision and the mydriasis remain the same, and to-day, after eight months have passed, no traces of the wound can be seen, and the vision has improved so that there is no notable difference between the eyes.

This case brings up many interesting points besides that of the spontaneous cure of detachment of the retina which took place in a few weeks and without medication. These are first, the violence of the traumatism and the irregularity of the wound produced by the blunt arrow. Notwithstanding these defective conditions and the outflowing of blood into the vitreous humor, the wound united, we might almost say by first intention and not the least internal or external inflammation of the eye resulted.

The seat of the wound was in the ciliary region. This location,

according to all authorities, imparts an extreme gravity to wounds of the eye, and I have not infrequently observed atrophy of the eye, irido-choroiditis and sympathetic ophthalmia due to no other cause than this. It would, perhaps, be rash after eight months to shout victory and to affirm that nothing untoward will occur in this eye, but its actual aspect gives one little reason to fear ulterior complications.

I have in my possession many similar facts, one of the most interesting of which I reported to you three years ago in which an eye had been literally burst in a fall by a vine-shoot which caused a circular peri-corneal wound nearly 2 cm. in length. Since I reported the case to you there has not been the least change in the wounded eye which has always appeared normal, and which has never since the accident, which occurred four years ago, been the seat of the least pain.

Finally, I desire to point out one peculiar feature to which I have already referred, namely, the persistent mydriasis which followed the injury and which no myotic has been able to make disappear even for a moment.

This persistent mydriasis is frequent in lesser injuries to the eye and no influence upon visual acuity and accommodation. I also observed two years ago a young girl who received a slight blow in the eye from the branch of a tree, following which considerable dilatation of the pupil occurred I immediately employed to combat this mydriasis all known means, but without effect. Notwithstanding this dilatation of the iris, accommodation remained normal and was unchanged when I last saw the patient some months ago. The same fact was noticed in the case of the young child which I have just reported. This dissociation of contractility in the ciliary muscle and in the iris which are both supplied by the same nerve, demonstrates that traumatic mydriasis should be considered as dependent upon a peripheral and terminal alteration of the ultimate branches of the common ocular motor nerve which is distributed to the iris, but which is not improbably a distinct nerve having separate fibers from the iris to the nucleus of origin of the third pair from which they are derived. I do not insist more on this fact which I think, nevertheless, should be noted in passing, but the discussion of which would be a digression from the subject which I have considered in this brief communication.

A CASE OF ASTIGMATISM CORRECTED BY ALTERATIONS IN THE LENS.[6]

Do astigmatic contractions, corrected by or associated with the lens, exist?

In his memoirs of ophthalmometry, Javal first answers: "We think that in a certain number of eyes, but exclusively in those persons who use their spherical accommodation there exists a compensatory astigmatic correction of the corneal astigmatism."

Unfortunately, a few lines further on, in small type we find the following *amende honorable:* "It often happens that we admit wrongfully the existence of astigmatic accommodation. The most of the cases of this accommodation are so obscure that two of our collaborators, MM. Geo. J. Bull and Tscherring are far from sharing our opinion."

If the faith of the Master may be shaken what would become of that of his disciples? "Do you believe in astigmatic contractions?" MM. Bull, Tschering, Sulzer answer me: "No." To the following question: "Do you deny their existence?" They again answer. "No." They await a convincing case. The following case will, I think, convince them:

In May, 1880, I examined M. Izarn for refraction. I found O. D. emmetropia S = 1. O. S. 90° — 1 — 2, S = 1. In 1888, the O. D. was attacked by a slight keratitis which necessitated occlusion for eight days. When the patient desired to resume the use of the eye he ascertained the existence of an astigmatism which had not previously existed. My examination verified an astigmatism of —1 in the O. D. formerly emmetropic. Thus the development of an associated astigmatism in the emmetropic O. D. was produced while this eye was covered and the O. S. was obliged to do the work of both, and consequently should have tended to correct its astigmatism; besides this, a few days later, the associated astigmatism of the emmetropic O. D. disappeared by the use of the eye and M. Izarn returned to his former condition.

M. Izarn is now 51 years of age. For a considerable time I had been surprised to see that he neither needed nor used presbyopic glasses. I thought that he used the left eye exclusively and that thanks to the inverse compound myopic astigmatism he could read as he did apparently without difficulty or fatigue.

In conversation with him, I asked him certain questions and was

[6] Chibret. Un cas de correction astigmatique du cristallin. *Archives d'Ophtalmologie*, Mai, 1894, p. 275.

astonished to learn that he utilized both eyes simultaneously for near vision. This was denied by me and affirmed by him. The following examination cleared up the mechanism of this strange vision.

M. Izarn read easily with both eyes open and fixed upon the paper at 28 to 36 cm. If the emmetropic O. D. was covered he could read only with difficulty with the astigmatic myopic O. S. This difficulty in reading indicates that the compound myopic astigmatism was not corrected. In fact this eye could see the vertical lines better at 28 cm. and the horizontal lines better at 36 cm., these distances corresponding the first to a refractive force of 3.50 D., the second to a refractive force of 2.75 D. Then being given the known refraction of this eye, which is $90° - 1 - 2$, there is a manifest astigmatism of 0.75 D. with the employment of an accommodation of 0.75 D.

When the astigmatic myopic O. S. was covered the reading of the emmetropic O. D. was not possible and could only be attained with + 2 D. which permitted equally clear vision of the horizontal and vertical lines. Therefore this eye had simple presbyopia and not associated astigmatism. In brief, clear vision when both eyes were open and fixed on the paper; manifest astigmatism of the O. S. when the O. D. was covered; presbyopia of the O. D. when the O. S. was covered.

Upon completing the proofs by reading with the interposition of Javal's contrôleur, it was ascertained that with the myopic astigmatic O. S. he could read very well with or without the contrôleur and could see equally well the vertical and horizontal lines at distances from 28 to 36 cm.; that with the emmetropic O. D. he could not read at all the parts of the print for which the rule required covering of the myopic astigmatic left eye, but that he could read well with + 2.

The ophthalmometric measures were taken with care by the Javal and Schiötz ophthalmometer made by Laurent.

O. D. — 44.50, 165° + 0.50.

O. S. — 44.75, 85° + 0.30.

Upon fixing the subject at 10° outside and to each side of the axis of the glasses in the two principal meridans we ascertained that the ophthalmometric measures did not vary from those above given by more than 0.50 D.

We ought not, therefore, to call upon deformities or corneal irregularities for an explanation of the phenomena of astigmatic correction as previously studied.

A single conclusion is to be deduced from the observation of these phenomena: The myopic astigmatic O. S. corrects its astigmatism and can only correct it when the emmetropic O. D. receives luminous impressions at the same time; if this eye ceases to be excited by light the astigmatic correction of the O. S. is no longer effected.

Under such conditions how can we correct astigmatism? It can be due only to two causes, either to astigmatic contraction of the ciliary muscle or to a greater contraction of the pupil of the astigmatic left eye. We know, indeed, that the pupil of the eye reacts more to light when the other eye is simultaneously affected. Now it is easy to put out of the way the influence of light upon the pupil; it is, indeed, sufficient to lessen the light by reducing it to a minimum. Under these conditions, M. Izarn with both eyes open and fixed upon the paper, saw well and even better, notwithstanding the reduction of the light, than with a strong light. Therefore the pupil could not have a corrective action on astigmatism.

Consequently we are forced to admit that this astigmatism is corrected by the action of the ciliary muscle alone.

In addition it is allowable to deduce from this case another very interesting conclusion: namely, that associated astigmatism may exist and disappear in the same individual according to circumstances. M. Izarn really had in 1888 an associated astigmatism of the emmetropic O. D. from the sole fact that he was obliged during several days to utilize the astigmatic left eye only and to correct its astigmatism. Now he continually corrects the astigmatism of his O. S. for near vision, and, nevertheless, the O. D. did not present more associated astigmatism than before. Habit rendered possible the dissociation of the accommodative sympathetic correction.

The transitory associated astigmatism of M. Izarn confirms the law of accommodative synergy by which both eyes are bound, but the latter part of the report demonstrates also that this law is not absolute or that the same subject may disobey it after having conformed to it.

In publishing this case I do not wish to conclude that the correction of astigmatism by the lens is the only physiological method of correcting astigmatism. On the contrary I believe that in most cases contraction of the pupil or winking intervenes, but it seemed to me useful and interesting to publish the report of one case in which the ciliary muscle alone effected the correction of the astigmatism.

In conclusion I add, that M. Izarn who is an extremely nervous subject and very sensitive to pain and to fatigue is never inconvenienced by the astigmatic effort which he has to sustain. Also I had never thought to propose to him a correction which would have been very disagreeable to him, and which is in all cases entirely useless. I consider it prudent in such cases to limit the application to those astigmatics alone who consult me for the correction of astigmatism on account of inability or inconvenience.

OTOLOGY.

NOTES FROM FOREIGN OTOLOGICAL JOURNALS.

By T. Melville Hardie, B. A., M. D.,
of Chicago.

Professor of Laryngology and Rhinology, Post-Graduate Medical School; Professor of Otology, College of Physicians and Surgeons; Assistant Surgeon Ear Department Illinois Charitable Eye and Ear Infirmary; Laryngologist and Otologist, St. Elizabeth Hospital.

THE OPERATIVE TREATMENT OF CHOLESTEATOMA—REINHARDT.[1]

In sixty cases in which the antrum was opened Reinhardt found cholesteatoma nineteen times and of these he treated fifteen with the persistent retro-auricular opening. In those cases in which the wound behind the ear closed a new formation and disintegration of skin took place, whereas, in those with the persistent opening this danger never arose.

The operation is begun by opening the antrum; and the meatus, tympanic cavity, auditus, and antrum are converted into a single cavity according to Stacke's method, slightly modified. After thorough cleansing of the cavity, it is kept permanently open; first, by

[1] For the notes of papers read in the Otological Section at the recent Eleventh International Medical Congress in Rome, the abstractor is indebted to the *Journal of Laryngology* for May and June in which a complete report of the proceedings in the Section appears.

the introduction of flaps from the side of the head; second, by transplantation from animals in suitable cases; third, by taking flaps from the posterior surface of the concha. By this last method the growth of hairs into the cavity is prevented. Cosmetic results were not considered.

Politzer and Dundas Grant did not think the persistent opening an absolute guarantee against recurrence.

ABSCESS OF FIXATION IN OTOLOGY.

Dr. Henri Colladon's conclusions were: 1. Acute suppurative otitis media may be terminated by the formation of a diffuse external otitis, the cure of which at the end of three or four days is followed immediately by the cessation of the otorrhea and cicatrization of the perforation.

2. This external otitis "of fixation" may be artifically induced by the injection and instillation of irritant antiseptics, *e. g.*, thymic acid.

3. Medication by fixation is very efficacious in acute and subacute otitis media purulenta. It should be made the subject of experiment in chronic cases.

Dr. Colladon's conclusions were not concurred in by all; Cozzolino and DeRossi considered an external otitis as a regrettable complication.

APPARATUS FOR THE GYMNASTICS OF THE DRUM AND OSSICLES.

Dr. Kirchner, (Würzburg), has given to his poor patients the instruments here described:

An India rubber tube 45 cm. in length, furnished with a tip to fit into the ear and an olive-shaped mouth piece. In the middle of the tube there is a globe of strong glass about $1^1/_2$ cm. in diameter in the cavity of which is a mass of absorbent cotton which serves as a filter. A little piece of gauze is used to make the meatus tip air-tight and to prevent pain upon its introduction. The apparatus is a substitute for the Siegle otoscope or Delstanche *rarefacteur*.

THE THERAPEUTIC VALUE OF EUROPHEN, ALUMNOL, DIAPHTERIN AND ANTISEPTIN IN SUPPURATION OF THE EAR.

Dr. Szenes, (Budapest), tried these drugs in eighty-six cases. Diaphterin in eighteen cases caused a burning sensation which lasted five minutes. In five cases of diffuse otitis externa, as also in nine cases of chronic suppuration of the tympanic cavity it at

once caused an increase of the secretion. Antiseptin was tried on sixteen patients, and despite its strong recommendation as an antiseptic in tubercle and syphilis he had an unfavorable report to give about it also. Europhen proved to be an antiseptic dusting powder in suppurations of the external meatus. It adheres to the wall of the meatus and decreases the secretion. It did not so act in suppuration of the tympanum. It is not dissolved in the pus. Alumnol was used in thirty-eight cases; caused a burning sensation in three patients only. In slight suppuration it possesses the property of forming with the pus stony concretions, a peculiarity which condemns it. In twenty-four cases of chronic tympanic suppuration with profuse discharge no formation of the concretions was observed, but the condition remained unaltered in spite of the daily repetition of the treatment for eight days. It was therefore given up.

ON THE EXTRACTION OF THE AUDITORY OSSICLES.

Dr. Ludewig, (Hamburg). The diagnosis of caries of the hammer and anvil is often uncertain. Even the breaking of granulations through the membrana flaccida is no certain sign. Destruction of the upper posterior quadrant of the drumhead indicates more certainly caries of the incus. When a chronic middle ear suppuration continues in spite of treatment lasting more than a month by syringing through the catheter and the ordinary treatment through the meatus, extraction of the hammer and incus is done through the meatus. Incus-caries was found in 85 per cent of the cases. To control bleeding a subcutaneous injection of secale cornutum in front of the tragus and behind the auricle, is recommended. Styptic solutions are to be avoided. When extracting the incus attention must be given to a process of bone found over the entrance to the antrum on which the incus hook is apt to catch. In his last fifty cases Ludewig had no fever, facial paralysis, marked vertigo, or other injurious complication.

Discussion: Politzer. Extraction of hammer and incus is done by him only when the greater part of the drumhead is destroyed, and also when there is cholesteatoma in the attic. In perforation of the membrana flaccida when suppuration is limited to the attic and hearing power nearly normal, the hearing becomes diminished by extraction of the ossicles, and operative interference should be limited at first to opening of the outer attic.

Ludewig replied that in his fifty cases he had not once seen any diminution of the hearing power produced by the operation. It was on the contrary often greatly improved.

Reinhardt. The frequency of cholesteatoma of attic or antrum is so great that cure of the suppuration can only be effected by the Stacke operation. Further, the diagnosis of cholesteatoma before operation is often different.

ON THE INFLUENCE OF MALARIA ON DISEASES OF THE EAR.

Dr. Garzia had observed twenty-four cases. In the acute cases the febrile attacks came on with pain in the ear, which ceased with the lowering of the temperature, leaving the patient deaf during the period of apyrexia. Quinin in small doses, as a rule, exerts its usual specific influence. If any permanent deafness remains it is, in Garzia's opinion, to be invariably charged to the malaria.

THE USE OF THE CURETTE IN OPERATIONS ON THE MASTOID

The course usually pursued by Dr. Blake in an acute mastoiditis, with evidence of suppuration, is to make a small opening in the mastoid with the drill, enlarge with chisel, and immediately to use curettes of different sizes until all of the diseased tissue is removed and the cavity-wall made quite smooth; a free opening is made into the antrum; the cavity is then allowed to fill with blood, and after the formation of the clot the wound is douched with hot sterilized water, closed without sutures, and dry baked dressings applied. The operation on the mastoid is always preceded by a large incision of the drumhead. Complete healing in five days has been secured. The curettes are made with a long tip and a rounded bowl to avoid injury to the dura.

EXPLORATORY TYMPANOTOMY.

Dr. Blake. The drumhead is progressively sensitive from below upward. Incision opposite the round window causes in the majority of cases but little pain and permits the application of a sterilized solution of cocain to the cut edges, and a usually painless continuance of the incision. A flap is made which falls outward and exposes the insensitive region of the incus and stapes. Through this opening tenotomy of the tensor tympani or stapedius and division of adhesions may be done painlessly so long as the instrument does not touch the cut edges in the membrana tympani. After the operation the opening is closed by the application of a paper dressing moistened in sterilized water. Healing is so complete that the operation may be repeated at intervals, if it seems desirable, for repetition of mobilization of the stapes or for other operations.

EXTRACTION OF THE STAPES IN CHRONIC NON-SUPPURATIVE DISEASE OF THE MIDDLE EAR.

Out of the twenty-two cases reported by Dr. Blake he was able in only one single instance to effect an improvement in hearing power and in this case fixation of the stapes was not complete. Some underwent decided deterioration as regards both hearing power and tinnitus. In five cases vertigo came on as the result of the operation, and in two of these it persists.

EXTRACTION OF THE STAPES.

Garnault, (Paris), performs the operation in (1) chronic hypertrophic otitis, (2) chronic purulent otitis after cure of the suppuration, (3) sclerosis. In this the subjective symptoms which seemed to indicate stapedectomy are notable diminution of hearing and tinnitus.

In the first two groups one may first try mobilization or rather perisynechtomy of the stapes. One typical case of each class is reported. Results: In (1), hearing power diminished a little, tinnitus ultimately disappeared. (2), hearing power same as it was before the operation, tinnitus disappeared. (3), tinnitus diminished; hearing power not improved. Garnault cannot deduce definite indications for the operation, but would perform it in cases of very annoying tinnitus.

The discussion which followed related largely to mobilization of the stapes, and Gellé and De Rossi were emphatic in their opinion that it is only in the sequelæ of otitis media purulenta that favorable results may be expected.

A NEW SYMPTOM FOR THE DIAGNOSIS OF DEEP-SEATED AFFECTIONS OF THE MASTOID APOPHYSIS IN OTITIS MEDIA PURULENTA.

Wratch, Nos. 48 and 49, 1893; *Rev. de Laryngol. d'Otolog., etc.*, Mai 15, 1894.

Dr. Okouneff urges the fact that there is often real difficulty in deciding as to the necessity for operation; that some of the symptoms ordinarily present, *e.g.*, pain and swelling in the mastoid region and upper posterior wall of the external meatus, may be absent; and that, on the other hand, all of the usual symptoms may be present and trepanation demonstrate the absence of pus. The more recently suggested percussion of the process has only a limited province. The procedure suggested by the author is based upon the conduction of sound through healthy and diseased bone,

and is as follows: An ordinary otoscope tube is taken, one end is introduced into the ear of the physician while the other is slipped over the end of a small-sized Politzer ear speculum which is applied to various points of the process to be examined. The physician strikes a tuning fork and places it on the vertex. If the bone is healthy a clear sound is conducted from the tuning fork through the tube; if on the contrary, the bone is diseased, the sound is dull. Two illustrative cases are detailed.

TREATMENT OF MASTOID SUPPURATION.

This subject was reported upon by Dr. Lubet-Barbon and Martin at the annual meeting of the French Society of Otology and Laryngology held in Paris, April 30, 1894. Med. Week, Paris, May 11, 1894. The following will serve to illustrate the practice of the French school of otologists. In an acute otitis, especially if severe mastoiditis threatens, the perforation in the drumhead is to be sufficiently enlarged and the pus evacuated by the frequent application of the air douche. It is to be used a great many times a day, and is much preferred to irrigation of the tympanic cavity through the Eustachian tube. The continued application of cold to the mastoid is recommended and blisters unconditionally condemned.

When the progress of the inflammation is not checked, trephining, without a preliminary Wilde's incision, is to be done without delay. The methods of Von Troeltsch (opening through the posterior-superior wall of the meatus); Carl Wolf, (removal with the chisel of the posterior wall of the canal after pushing forward the auricle and soft parts); Delaissement, (opening the cells near the tip and not including the antrum) are unfavorably considered, and the Schwartze operation recommended for acute cases. The incision is made in the retro-auricular groove and is sufficiently long to permit of turning the auricle and soft parts of the canal forwards and the posterior flap backwards. The opening with the hammer and chisel is made to the depth of 2.5 centimeters if required, in the angle formed by the temporal line which extends backwards from the spina supra meatum, and the posterior border of the meatus. When curetting the antrum and adjacent cells the cutting edge is not to be turned upwards or backwards on account of the sinus. The first dressing of iodoform gauze is, as a rule, left undisturbed for a week, and is carefully removed so that healing may not be interfered with.

In acute otitis it is unnecessary to proceed from the antrum to

the tympanic cavity, but with chronic trouble there the latter must likewise be opened. The method: After pushing the auricle forwards and downwards and detaching the posterior flap in its entirety, the soft parts of the canal are separated from the bone by means of a narrow raspatory, cut across as far in as possible and withdrawn like a glove finger. The antrum is then trephined and a probe introduced through the auditus into the tympanic cavity. The external bony wall is carefully chiselled away so that the tympanic cavity and antrum are connected by an open groove. The upper limit of this channel should barely pass beyond the temporal line while the lower must not be below the middle of the posterior border of the meatus in order that the facial nerve may be certainly avoided. The cavities are carefully cleansed and curetted, the cutaneous lining of the meatus, which was previously withdrawn, split along its upper border and the two flaps used to cover as far as possible the operation cavity. Gauze tampons are carefully applied through the meatus.

When a mastoid fistula exists the only proper course is to open the antrum and by removal of the bone to completely expose the track of the fistula; curetting in a blind way may result in the facial paralysis, opening of the sinus, or perforation of the cranium.

In the discussion Dr. Moure thought that Stacke's operation should not be performed for a simple otorrhea on account of the great loss of bone substance produced by it.

TREATMENT OF DEAF-MUTISM BY ACOUSTIC EXERCISES.

Discussion in Medical Society in Vienna, April 27, 1894, reported in Med. Week., Paris, May 4, 1894.

Dr. Urbantschitsch. The treatment consists in methodically exercising the organ of hearing. A beginning is made by pronouncing in the ear two vowels, *e. g.*, a and e in a loud voice until the child can distinguish them; then successively other vowels, the consonants, and sentences. Exercises of five to ten minutes, three or four times a week. Several persons should take part in the exercises to accustom the deaf-mute to different tones of voice. Musical notes are often used, and Urbantschitsch found that the perception of spoken words is thereby facilitated.

The results depend upon the degree of auditive perception and upon the extent to which this may be developed. This is largely influenced by the mental condition, and Urbantschitsch recommends that those who are backward should be separated from the normally endowed, in asylums.

Since October, 1893, sixty children were treated; of these none could distinguish sentences; six perceived words; twenty-two, vowels; thirty-two had only traces of audition left. In April, twelve perceived sentences; sixteen, words; eleven have only traces of audition.

Gruber favors these exercises but would not use them where only a trace of audition was found.

Politzer did not share Urbantschitsch's optimistic opinions. Spontaneous improvement is not rare when vowel perception exists. Further improvement obtained by acoustic exercises may be lost after a time.

INSTILLATION OF OIL IN CASES OF FOREIGN BODIES.

Ziem, (Dantzic), reports two cases in which instillations of oil apparently brought about spontaneous expulsion of the foreign body. In the first case attempts were first made with a hook to remove a pea from a child's ear. Dr. Zeim tried injections of water but unsuccessfully. Attempted perforation of the pea with the galvano-cautery was very painful, and instillations of warm oil were prescribed. The pea was, in a couple of days, so near the orifice of the ear that the mother removed it. In the other case a coffee bean was spontaneously expelled at the end of two days. After instillation a cotton tampon is to be inserted, and the patient directed to lie as much as possible on the affected side,

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CHLORID OF ZINC IN OTITIS MEDIA PURULENTA WITH GRANULATIONS.

Montalescot, (Med. Week, Paris, June 1, 1894), cauterizes with a solution of chlorid of zinc, fifteen grains to the ounce. It is applied on absorbent cotton on a probe three or four times a week. Large granulations are first removed by the curette. The treatment is contra-indicated in otitis media purulenta in which the mucous membrane is simply hypertrophied.

ANOTHER MODIFICATION OF THE STACKE OPERATION

af Forselles, (*Archiv. für Ohrenheilk.* 36, 3 März, 1894), recommends a procedure first suggested by Schwartze to shorten the period of healing in the Stacke operation. In the case reported the preliminary operation was performed in the usual way. When the granulations in the tympanic cavity were being curetted some contractions in the muscles controlled by the facial nerve were

noticed, notwithstanding the fact that the Stacke "protector" (Schützer) was used. After trephining, the incision behind the ear was extended downwards 2 cm., and a flap 5 cm. long and 1.5 cm. broad, cut from the skin behind and below on the mastoid process and inserted in the wound cavity, an isthmus being left connecting the flap with the skin at the upper angle of the wound. The edges were then approximated and sutured. Five or six weeks later the field of operation was nearly altogether covered with epithelium. The author prefers this to the use of the Thiersch skin-grafts.

ABSTRACTS FROM ENGLISH AND AMERICAN CURRENT OTOLOGICAL LITERATURE.

By Leonard A. Dessar, M. D.,
of New York.

CHOLESTEATOMA OF THE EAR.

Dr. Harry Friedenwald, of Baltimore, (*Medical News*, *American Journal of the Medical Sciences*, May, 1894), gives a very interesting account of several cases of this disease: He says that it is important to remember that there is a tendency for cholesteatoma, or cholesteatomatous masses to recur. Patients are therefore to be examined at intervals of a few months for a long time after their apparent cure.

The treatment consists chiefly in the thorough removal of the cholesteatomatous masses, and complete antiseptic cleansing of the drum cavity by the ordinary well-known means.

SIMPLE INFLAMMATION OF THE MIDDDE EAR, AND SEQUELÆ.

At the recent meeting of the Pennsylvania Medical Society, Dr. S. MacCuen Smith, of Philadelphia, (*Medical News*, May, 1894), read an interesting paper on this subject.

He stated that in all cases the ear of the new born child should be examined, and if no accumulation in the external auditory meatus be found, and the membrane seems to be inflamed to any

extent, the middle ear should be inflated according to Politzer's method. There are two forms of acute inflammation of the middle ear; one is due to exposure to cold, wet, etc., and the other is due to the entrance of some infectious agent. Whatever the cause of the inflammation, the inflammatory exudate will undergo fatty degeneration unless removed. Inflation of the ear is the most important element of treatment in most cases. Deaf-mutism must be regarded as a sequela of some pre-existing inflammatory disease.

EAR COTTON—SALMON COLORED.

Dr. George E. Abbot, of New York, (*Medical Record*, June 23, 1894), recommends in place of ordinary white cotton, the use of salmon colored absorbent cotton, which has the advantage of being so nearly the color of the auricle, that it is difficult to perceive it in the ear.

CHRONIC TYMPANIC VERTIGO; ITS RELIEF BY SURGICAL LIBERATION OF THE STAPES.

Dr. Charles H. Burnett, (*Medical Age*, June 11, 1894), in an article read before the American Otological Society, May 29, 1894, discusses the affection for which he has suggested the name of chronic tympanic vertigo. In this condition there is an abnormal retraction in the conductors of sound, and the stapes, being the weakest, is forced unduly into the oval window; excessive pressure is thus exercised, the labyrinth fluid, the motor filaments of the auditory nerve are irritated, and vertigo is the result. Chronic tympanic vertigo usually occurs in an ear which has been for some time previous the seat of tinnitus and deafness from a chronic catarrhal process in the drum cavity. The nares and naso-pharynx usually show by this time no disease. The membrana tympani will be found markedly and continuously retracted, and the stapes therefore unduly pressed into the oval window and held there by the overpowering weight and force of the malleus and incus.

A characteristic feature of chronic tympanic vertigo is its paroxysmal occurrence, which distinguishes it from the vertigo caused by a tumor in or near the auditory nerve, which is always constant though it may be slight. Retention of consciousness even in the worst cases, where the patients reel and fall, serves to distinguish tympanic vertigo from epilepsy and apoplexy, though it is unfortunately too often mistaken for these maladies.

The only way to relieve chronic tympanic vertigo and the tinni-

tus and deafness always attending it, is to liberate the stapes. This is best accomplished by elimination of the incus from the retracted chain of ossicles. Thus the power of the retractive lever is overcome; and the stapedius, relieved of its forceful antagonist, the tensor tympani, lends assistance in drawing the stapes from the oval window, and the morbidly impacted bone is liberated.

The author reports three cases of tympanic vertigo relieved by removal of the incus, in addition to sixteen similar ones previously published, all of which testify to the utility of this operation.

MIDDLE EAR OPERATIONS FOR IMPROVING THE HEARING.

Dr. E. B. Dench, (*Medical Record*, June 9, 1894), concludes that the removal of the stapes, both in the suppurative and non-suppurative cases, had not yielded as uniformly good results as removal of the two larger ossicles and artificial mobilization of the stapes. In all, sixty-three cases had been operated upon for improvement of the hearing, and in fifty-five the results had been satisfactory.

STACKE'S RADICAL OPERATION FOR OBSTINATE CHRONIC OTORRHEA.

Dr. Walther Vulpius, (*Medical Record*, June 16, 1894), gives an elaborate description of this operation, and reports cases which demonstrate that it will cure even the most obstinate and the most strangely complicated chronic otorrheas. In the author's opinion the Stacke operation is indicated as the final and most radical means of treatment in cases of chronic middle ear suppuration, which is maintained either by cholesteatoma of the attic and antrum or by caries, if the latter cannot be with certainty be confined to the ossicles. It should not, however, be resorted to before more sparing methods have been thoroughly tried, and proved to fail.

Only if threatening complications or abscesses over the mastoid region immediately require an opening of the antrum, it is, in most chronic cases of middle ear suppuration, advisable to make at once the more radical Stacke operation, which shortens the time of after treatment, and gives better chance for a permanent cure of the otorrhea.

The operation should never be made in cases of mastoiditis complicating an acute otitis media purulenta.

BELL'S PARALYSIS FOLLOWING EAR OPERATIONS.

Dr. L. J. Hammond, (*Medical News*, May 26, 1894), reports three cases of upper tympanic or attic suppuration, in which operation was followed by facial paralysis; he believes, that owing to the anatomy of the parts this accident is very likely to occur.

This region of the middle ear is marked off at about its middle by the bony ridge which forms the covering of the facial nerve, or, the nerve may pass through this region entirely devoid of any bony covering. Nothing but the greatest care could possibly prevent wounding this important structure, if the bony covering be present and carious, its removal cannot be accomplished without seriously interfering with the nerve.

The operation employed by the author, comprised removal of the bones of the ear, and chiselling away of the upper posterior portion of the roof of the canal. He propounds the question whether this condition is less likely to occur after Stacke's operation.

A CASE OF ACUTE INFLAMMATION OF THE MIDDLE EAR, TERMINATING IN PURULENT PERIPHLEBITIS OF THE LATERAL SINUS.

Dr. Albert H. Buck, (*Medical Record*, June 30, 1894), in a paper read before the American Otological Society, reports a case of this affection, which is of a special interest because it began almost at the start as an Osteitis. Paracentesis of the drum-membrane was performed at an early period—*i. e.* at the end of 24 hours, for the relief of the intra-tympanic pressure, but failed to arrest the progress of the inflammation. The author explains his lack of success on the ground that even at this early stage, the inflammation of the adjacent bone, particularly that portion which lies near the posterior end of the tympanum, and around the antrum had made considerable headway. About one month after the first observation, the mastoid was trephined, but no pus encountered until the antrum was reached, and then only a small amount. The pain was relieved by the operation, but recurred later, and as there was an increase in the redness and swelling of the integuments covering the lower and posterior part of the mastoid process, this portion was removed by chiselling. No pus however was found, but the bone appeared in a markedly hyperemic condition. The symptoms became worse after the last operation; the movements of the head became more painful, and there was an increase of the swelling and tenderness in the region

of the mastoid bone and occiput, and pain in the left eye. These symptoms led the author to believe that the inflammation was extending in a backward and inward direction, and for that reason he chiselled away the outer and posterior surface of the mastoid, no pus being found until the immediate wall of the channel for the lateral sinus was reached. At this point the bone seemed to have undergone softening, and thrombosis of the vein appeared to be present. In view of this serious condition of affairs the author availed himself of the services of Dr. Theodore Lange, who exposed thoroughly the downward track of the pus along the jugular vein. He also removed all that remained of the mastoid process, thus laying bare the jugular vein from its situation in the sigmoid groove, down to a point about one inch below the level of the mastoid process. All of the juglar vein thus exposed to view was evidently in a thrombosed condition, as its wall showed no changes in tension when firm pressure was made upon the side of the neck, lower down, or when the patient coughed. Dr. Lange, also removed, in an upward direction, enough of the squamous portion of the temporal bone, where it forms the outer wall of the vertical part of the lateral sinus, to give him free access to any collection of pus that might exist in this part of the cranial cavity. No such collection, however, was found. Then, finally, he worked his way cautiously downward and inward until he had exposed the styloid process, the trunk of the facial nerve as it emerges from the stylomastoid foramen, and the region beneath the foramen lacerum. The probe was passed through this opening into the cranial cavity, but no collection of pus was found. Since this operation, the patient has been progressing rapidly toward recovery. It is noteworthy that throughout the entire attack, the hearing in the affected ear remained fairly good, and has now returned to a normal condition. On the ground of the present case, and others of a more or less similar nature recorded in medical literature, Dr. Buck formulates the following rule. "The pesistence of deep seated pain behind the mastoid process, continuing after the antrum has been opened and thoroughly drained, is sufficient warrant for making an opening into the sigmoid groove for the lateral sinus; and it is not advisable to wait until the patient has chills, or until the body temperature has risen to an appreciable degree, before resorting to operative interference in this direction." If we wait for the corroborative evidence furnished by the symptoms last named, we shall lose lives that might otherwise be saved.

RHINOLOGY AND LARYNGOLOGY.

ABSTRACTS FROM CURRENT LARYNGOLOGICAL AND RHINOLOGICAL LITERATURE.

By M. D. Lederman, M. D.
of new york.

EPITHELIOMA OF THE SEPTUM.

Dr. MacIntyre, (*Jour. of L., R. et O.*, Vol. 8, No. 6). The patient, a man aged 53, thought he was suffering from polypus. On examination the tumor was observed springing from the anterior portion of the septum and involving the perichondrium over the triangular cartilage on the left side. The growth, together with the cartilage, was excised. Microscopical examination showed it to be epithelioma.

ANGIO-FIBROMA OF THE TONSIL,

Mr. Wyatt Wingrave, (*Ibid*). This specimen, diagnosed by the microscope, was shown before the British Laryngological and Rhinological Association at the April meeting. It first appeared as a red polypus projecting about half an inch from the surface of the left tonsil.

ACTINOMYCOSIS OF THE FACE CURED BY IODID OF POTASSIUM.

Dr. Gaube. (*Ibid*). The disease appeared in a girl 18 years old. It resembled dental periostitis, (tumefaction of the left maxillary and gingival regions). Carious teeth and fungous gingivitis existed. Over the tumor the skin was blue-violet in color, and there was engorgement of the sub-maxillary glands. Incision into the swelling was followed by an outflow of a small quantity of liquid containing yellow grains. The microscope, together with bacteriological investigation of these bodies, revealed the nature of the affection. The patient declined operative interferance, so iodid of potassium was prescribed — three grams daily. Two weeks later suppuration occured in the tumor, and a small abscess opened with discharge of pus and yellow patches of actinomyces. Complete cure followed in two months.

EXUDATIVE PHARYNGITIS.

Dr. Glasgow, St. Louis. (*Medical News*, Vol. 64, No. 24). A paper upon this subject was read at the annual meeting of the American Laryngological Association, June 1, 1894. The case reported was that of a child ten months old, following exposure to cold. Pain in the ear, with coryza and high fever were the symptoms present from the outset. The temperature was very irregular, resembling that of a septic process. Excoriations around the nose were covered with a whitish pellicle. Similar lesions appeared on the tonsils, uvula, soft palate and pharynx, but not in the nose. There were no enlarged glands. The disease was treated with sodium salicylate and phenol, with brandy internally and hydrogen peroxide externally. Prolonged aphonia and urgent dyspnea were prominent symptoms. The mucous contained streptococi, but no Löeffler bacilli.

SINGERS' NODES.

Dr. F. I. Knight, Boston, (*Ibid*). The author describes these lesions as little nodules on one or both vocal chords at or about the junction of the middle and anterior thyroids. They are caused by overstrain of the voice or faulty use of same. When of the diffuse variety, they are known as chorditis tuberosa of the bands. Rest and mild astringents have proven satisfactory treatment in the author's experience. Gleitsmann recommends the galvano-cautery, chromic or trichloracetic acid. The solid stick of argentum, lactic acid in concentrated solutions have also proven beneficial.

A CASE OF LUPUS OF THE NOSE AND LARYNX.

Dr. Dundas Grant, London, (*British Med. Jour.*, No. 1744). The patient was shown before the Laryngological Society of London. The treatment was scraping, with the application of lactic acid and arsenic internally. Dr. Lemon showed a girl 10 years old suffering from lupus of the gums, roof of the mouth, posterior palatine arches, epiglottis and the ventricular bands. At different places cicatricial tissue was observed. The same line of treatment was to be used, together with the galvano-cautery, and cod liver oil internally.

EPISTAXIS.

Dr. Robert Fullerton, Glasgow, (*Glasgow Med. Jour.*, Vol. 40, No. 5). In the author's experience the bleeding point was quite

frequently found on the anterior surface of the cartilagenous septum, about half an inch behind the columna, and half an inch above the floor of the nostril. For slight erosions nitrate of silver or chromic acid have proven satisfactory. The galvano-cautery has acted perfectly in every case. Iodoform gauze is excellent for plugging.

ANTIPYRIN AS AN ANESTHETIC IN DISEASES OF THE NOSE, PHARYNX AND LARYNX.

W. Urobleioski, (*Archiv für Laryng. und Rhinologie*, Vol. I, No. 3). The author, after numerous trials, finds antipyrin used as a parenchymatous or submucoid injection, a most excellent anesthetic. He has removed portions of deflected septums, curetted tubercular larynges, galvano-cauterized granular pharynges without giving any pain to his patients. In tubercular laryngitis with extreme dysphagia, an injection of the antipyrin solution, in the neighborhood of the arytenoid cartilages, has given freedom from pain for twelve hours. In a number of cases the pain has been absent for a similar length of time, *i. e.*, twelve hours. In these cases he employs a 50 per cent solution, injected by means of Herynq's syringe. The drug acts better in combination with cocain, the author preferring the following solution:

Antipyrin,	2.0
Cocain muriate,	1.0
Aqua dest.,	10.0

Although the injections were made frequently, he has never had any complications arising. The local anesthesia is at its height from fifteen to thirty minutes after the injection.

THE PHARYNGO-LARYNGEAL TYPE OF ACUTE MILIARY TUBERCULOSIS.

Dr. George Catti, Fiume, (*Wiener Klinische Wochenschrift*, Vol. 7, No. 24). This rare manifestation was observed in two children. In the first instance, a boy 8 years of age complained of sore throat and dyspnea. Examination of the pharynx revealed nothing abnormal, but the laryngeal picture showed marked edema of the glottis and lig. pharynges-epiglottica. The condition strongly resembled an acute edema, except here and there small ecchymotic spots were noticed. Two days later the miliary tubercles appeared distinctly. No autopsy was performed in this case.

The other patient was a girl 12 years old, was brought to the clinic suffering from pain in attempting to swallow. Nothing but fluids could be swallowed. On examination the cervical glands were found swollen, with a marked redness and edema of the uvula, the gums and both tonsils. The appearance of the throat was that of a starting diphtheria, but no elevation of temperature was present. The girl absented herself for a few days, but returned with marked dyspnea and a diagnosis of diphtheria. A croupous membrane had formed over the tissues, but miliary tubercles could be seen on the small of the pharynx, epiglottis, the arytenoid cartilages and ary-epiglottidean folds. The glottic-chink was almost entirely obliterated by edema of the soft tissues. After a few days of increasing dyspnea, the child succumbed. The necropsy corroborated the diagnosis of acute miliary tuberculosis.

Dr. W. H. Wakefield has removed from Salem, N. C., to Winston, N. C.

Dr. G. Oram Ring, of Philadelphia, has removed to 1442 North Thirteenth Street.

Dr. J. E. Sheppard, of Brooklyn, N. Y., has removed from 175 to 147 Remsen Street.

Dr. Dunbar Roy, Atlanta, Ga., has removed from Whitehall street to "The Grand."

Dr. Oren Oneal, of Wabash, Indiana, has moved into the new Masonic Temple of that city.

Dr. W. H. Baldinger, Galveston, Texas, has removed his office to 406 Twenty-first Street.

Dr. Clarence Archibald Veasey, of Philadelphia, was married to Miss Gertrude Mabel Clogg, of the same city, on the 20th of June, 1894.

Dr. B. A. Gemmell, who has been in practice at Pendleton, Oregon, a number of years, has returned to Salt Lake City, and resumed practice.

Drs. A. C. Rogers and Thos. J. McCoy, late House Surgeon to the Manhattan Eye and Ear Hospital of New York, have entered into a partnership at Los Angeles, Cal. Dr. Rogers has been established in practice at Los Angeles a number of years. He is also an Ex-house Surgeon to Manhattan Eye and Ear Hospital.

Dr. Harlan P. Allen, of Columbus, Ohio, favored the ANNALS with a copy of the law passed by the Ohio Legislature last spring, for the prevention of blindness, which should have appeared in the April issue of the ANNALS, but was crowded out. The law is the same as the form that was drafted by the committee appointed by the Ophtholmological Section of the American Medical Association, last year, which has become a law in New York, Maine, Rhode Island, Minnesota and Maryland.

STANDARD DICTIONARY OF THE ENGLISH LANGUAGE UPON ORIGINAL PLANS, DESIGNED TO GIVE, IN COMPLETE AND ACCURATE STATEMENT, IN THE LIGHT OF THE MOST RECENT ADVANCES IN KNOWLEDGE AND IN THE READIEST FORM FOR POPULAR USE, THE ORTHOGRAPHY, PRONUNCIATION, MEANING AND ETYMOLOGY OF ALL THE WORDS AND THE MEANING OF IDIOMATIC PHRASES IN THE SPEECH AND LITERATURE OF THE ENGLISH SPEAKING PEOPLES. BY FUNK & WAGNALLS COMPANY, NEW YORK.

When I bought Webster's International Dictionary I thought it was perfect, but when I examined The Century I thought of the man who said he could make perfect thermometers, but refused business when the Doctor ordered *two perfect* thermometers.

I now have Webster's International, The Century, and the first volume of The Standard. When asked which is the best I say, *all of them*. They form the tripod of the English language. Each has its peculiar merits. The student should have them all, but if he can have one, only, let it be The Standard, because it is the most recent and up to date, and has many distinctions heretofore overlooked, or inadequately presented which add excellence to the text, and will be appreciated by those who are choice in the use of words. The Standard has given special attention to synonyms, and has added the antonyms to its list.

The Standard has made a new departure in selecting quotations from recent authors and indicating where they can be found.

It is stated that 100,000 volumes have been consulted in order to obtain these quotations, and that 500 readers have been engaged in hunting them up for the dictionary. A conservative drift toward the simpler form of spelling has been recognized throughout the work, and the dipthongs "æ" "œ" have been exchanged for the letter "e" in all words fully Anglicized. Vocabulary places have been given to the 3,500 words to which the American Philological Association and the American Spelling Reform Association recommend the immediate application of the principles of the spelling reform, the same principles that have been adopted also by the Philological Society of England.

The dropping of the "e" in the spelling of words in chemistry, *e. g.*, bromin, morphin, quinin, iodin, chlorin, iodid, atropin, etc., in compliance with the wishes of the Chemical Section of the American Association for the advancement of Science, is a long step forward. Those who use a dictionary, like the working physician, will find the two volumes into which The Standard is divided of great convenience, though we are told that the entire work can be obtained in one volume. The Standard Dictionary is full, accurate and complete.

Each set of words has been treated by an expert in the science, art, craft, etc., to which the terms belong. The pictorial illustrations are original, numerous and admirable. In typography, arrangement of matter, quality of paper and binding, the book is all that could be desired.

AN ILLUSTRATED DICTIONARY OF MEDICINE, BIOLOGY AND ALLIED SCIENCES: INCLUDING THE PRONUNCIATION, ACCENTUATION, DERIVATION AND DEFINITION OF THE TERMS, USED IN MEDICINE, ANATOMY, SURGERY, OBSTETRICS, ETC., ETC. By George M. Gould, A. M., M. D., Author of "The Student's Medical Dictionary;" "12,000 Medical Words Pronounced and Defined;" "The Meaning and the Method of Life;" Editor of "The Medical News;" President 1893-1894, American Academy of Medicine; one of the Ophthalmologists of the Philadelphia Hospital. Small quarto, pp. 1,633, P. Blakiston, Son and Co., Philadelphia, 1894.

As indicated upon the title page, the work in this volume is "based upon recent scientific literature:" hence its value to the physician of to-day. To effect this purpose, the author has spent much labor and time. First, he has been compelled to look over innumerable monographs and volumes upon special subjects, and to search through that great maze of literature, which comes to us periodically, in order to find new words and their significations. From this great world of medical writings, he has found it necessary to separate and to use those words that have any legitimate value both as to correctness of coinage and truthfulness of intended meaning. Besides doing this, he has included all those obsolescent terms that may be of use to the present student.

Recognizing the desirability of knowledge of biologic terms and those of other related sciences to the medical man of to-day, he has taken great pains to place all those words and meanings in botany, zoölogy, pharmacy, chemistry, etc., that may be thrown into the path of the reader of medical subjects. To this, giving as much as possible an encyclopedic character to the work; adding graphic illustration where verbal expression would be vague; classifying great numbers of words and expressions of relevant meaning into well ordered and carefully arranged tables, (an attempt that has not been before equalled in the English language); adopting the newest and the best grounded suggestions for consistent phonetic spelling, such as has been adopted by the most prominent, and in fact world renowned general lexicographers of to-day; and offering the easiest and the most comprehensible plan of orthoepy by noting the sound of the vowel by its relative position in the word, and thus eschewing as many diaceltic marks as possible, he obtains one of the greatest results and one of the most successful undertakings in modern medical lexicography.

For the benefit of the usual readers of this journal, the reviewer, who is fairly conversant with their phiologic needs in Ophthalmology, has spent much time in scanning through the book, in order to determine the correctness of derivation, the certainty of the method of pronunciation, and the exact signification of the most used and the most doubtful words in this branch of medicine. He has so universally found his expectations realized, that for these

reasons alone, he would recommend the volume as one of the best of friends and one of the safest of helpers to every ophthalmic student, who in his literary undertakings, desires to keep abreast with these progressive times.

MISCELLANEOUS.

According to the Eleventh Census of the United States (Part 2 of the Compendium, not completed) Missouri has more blind people than any other State, according to population, as will be seen by observing the following statistics, which were kindly furnished to the Editor of the ANNALS by the Commissioner of Census:

STATE.	Population Males.	Population Females.	Total Population.	Blind Males.	Blind Females.	Total Blind.
Massachusetts	1,087,709	1,151,234	2,238,943	978	868	1,846
Missouri	1,385,238	1,293,946	2,679,184	1,331	1,126	2,457
Illinois	1,972,308	1,854,043	3,826,351	1,649	1,185	2,834
Pennsylvania ..	2,666,331	2,591,683	5,258,014	2,262	1,663	3,925
New York	2,976,893	3,020,960	5,997,853	2,370	2,019	4,389

It is to be observed that Missouri has 91.60 blind people per 100,000 inhabitants, while Illinois (next door neighbor) has only 73. blind people per 100,000 inhabitants. Illinois has a State Eye Infirmary (Hospital, organized May 1858) for the gratuitous treatment of the poor, afflicted with disease of the eye, and while the population of Illinois has continued to increase, the well trained ophthalmologists, with the advantages of the State Infirmary, have reduced blindness and thereby enabled hundreds of poor men, whose eye-sight was almost gone, to return to honest labor and earn their own livelihood, and become good and useful citizens, instead of being expensive wards to the State. Missouri is now only thirty-six years, three months and five days behind Illinois, in things medical, and may never have as many people, with good eyes, but Missouri will soon have more blind people to support than Illinois can ever have, if the Missouri Legislature does not provide a suitable hospital and the necessary appliances for the proper treatment of the poor who are afflicted with disease of the eye.

The corporation doctor appears to be in line of promotion. He may eclipse the medical college professor in the Western States, within a few years. His practice has heretofore been "limited to railroad surgery," whatever that may mean, but the managers of the big dry goods corporations are sometimes railroad directors and know about the railroad surgeon, and we are told that the dry goods corporations are preparing to establish and maintain prescription counters and employ "leading physicians" to prescribe for customers free(ly) and do minor operations—*e. g.*, "remove ovaries while you wait, repair perineums (for ladies) without delays, and cauterize chancres (for the boys) while the band plays." The condition of the married men who pay dry goods bills will be no better than that of the honest family physician—"general practitioner." The manager of one dry goods corporation has been advised to employ tall M. D.'s so they can take packages from high shelves for the salesladies, when not professionally engaged.

It has been remarked that the present superintendent of the Saint Louis, (Mo.) City Hospital would make a good newspaper advertising agent, and the dry goods corporations would do well to get him, after his term expires, and a good physician, who is not "supported" by the diploma mills, is appointed to conduct the legitimate medical affairs of the City Hospital (not to advertise himself in the newspapers).

If it has come to pass that the office of superintendent of the Saint Louis, (Mo.) City Hospital can not be held by a physician, without making it an advertising scheme, and thereby violating the correct established principles of the honorable profession of medicine, the office should be relegated to the fake "political doctor."

The number of good contributions offered to the ANNALS continues to increase so that it has become absolutely necessary that the book be again enlarged. This number contains sixteen pages more matter than the April number contained, and the next, October, number will contain more than one hundred and forty-four pages. Arrangements are being made to send the ANNALS out in beautiful book form next year. Each number will contain one hundred and sixty pages.

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2. Writing must be distinct and plain, and *especially all proper names.* (*If possible a manuscript should be type-written.*)

3. Proofs will be furnished authors for correction and revision, but it is requested that alterations be limited to what is of essential importance, as changes in the copy are equivalent to resetting, and cause additional expense and much annoyance.

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